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*BUILDING EXPERIENCES —
A REFLECTIVE DESIGN PROCESS
FOR MEDIA ARCHITECTURE*

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Thesis submitted in partial fulfilment of the requirements
for the degree of Doctor of Philosophy

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ABSTRACT

Media Architecture design, although visually prominent and involving interdisciplinary collaboration, rarely succeeds in creating urban situations of contextual relevance beyond temporary effects. This research understands Media Architecture as a communication medium and proposes the need to engage with its multi-stakeholder audience from early on in the conceptual design stage.

This practice-led design research presents a broad critical investigation into the emerging field of Media Architecture (Jaschko & Sauter 2006; Foth 2008; Haeusler 2009) spanning conceptions of media space, experience, participation and design as discourse (Scollon & Scollon 2003; Fatah gen. Schieck 2006). Its findings contribute a new perspective on Media Architecture as experiential visual design process, based on an analysis of design methods, principles of participatory design and reflection, as well as an overview and classification of Media Architecture practice. Following a related literature review, the thesis identified experiential learning and the notion of troublesome knowledge (Meyer & Land 2003; Perkins 1999) as a distinguishable new perspective on design for Media Architecture. By connecting exploratory and generative design research tools (i.e., interviews, collaborative expert workshops, visual prototyping) with theoretical constructs of learning theory (Schön 1983; Kolb 1983), experience (McCarthy & Wright 2004) and ownership in urban design (McDonnell 2009; Townsend 2013; Lange & Waal 2013), this thesis developed an experimental design methodology for stakeholder involvement in Media Architecture. An iterative review and reflection process led to methods evolving from initial research tools for analysis to self-reflective design process outcomes.

The findings of this study were used to create the *Media Architecture Archive (MAA)*, a digital participatory database using a comprehensive classification system of Media Architecture practice. It is complemented by an experiential *method framework* based on visual design for contextual research, envisioning and prototyping in Media Architecture. Thus, the research contributes a novel approach to visual communication in Media Architecture, by applying visual design to encourage stakeholder involvement, discourse and reflection at early stages in the design process. The self-reflective structure of the study contributes to our knowledge of how practice-led learning processes applied through visual communication can serve as an extension of the Media Architecture experience as both process and outcome.

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1 INTRODUCTION

1.1 Introduction

“There is a necessity to go beyond existing architectural typologies to create appropriate new kinds of spaces for media integration.”

(Huang & Waldvogel 2004)

This PhD thesis describes practice-led research into experiential visual design processes for Media Architecture. It is based on the perceived shortcoming that design approaches for large-scale media installations are interdisciplinary but mostly self-contained processes. Their potential as a dynamic communication medium for meaningful experiences in urban space often remains hidden to the general public. It is argued that current design methodologies do not leverage opportunities of visual discourse to encourage exchange and sustained engagement with non-professional stakeholders. The central question guiding this study thus is:

How can experiential and visual design methods help create multi-stakeholder participation and engagement in Media Architecture?

The study builds on and expands the theoretical, practical and methodological foundations of Media Architecture in relation to experience design, design discourse and reflective practice. It contributes to the field of Media Architecture in several ways by presenting:

- **A definition of Media Architecture as shared experience** based on **theoretical discourse** about urban digital media spaces and philosophical perspectives on experiencing (digital) technologies of place making, including the identification of a classification system for properties of Media Architecture as well as the review of current design processes in the field.
- **An experiential design methodology for ownership that** builds on principles from learning theory and experience design that are adapted for use in Media Architectural contexts to address stakeholder involvement, discourse and reflection through visual and practical engagement.
- **Practical design experiments**, by providing a digital prototype of the visual Media Architecture Archive (MAA) based on a developed classification system, and the design of a prototypical visual methods toolkit, which can be used in future workshops and collaborations with professionals.

The work puts additional emphasis on reflective visualisation practices as a conceptual experience of Media Architectural design. It is argued that visual methods provide tools for reflective stakeholder discourse, informing the design procedure as well as the actual design outcome. Correspondingly, schematic information visualisations are developed and applied as tools for communication about and self-reflection on Media Architecture.

This emphasis on visual communication techniques for reflection stems from the researcher's specific approach to identify procedures and tools from his own reflective research process in order to translate them to a newly proposed experiential design methodology. It is conceived as an integrative means for facilitating reflective design procedures specifically during early-stage conceptualisations of Media Architecture.

The central outcomes of this study are practice-led research contributions whose application as design methodology and related tools leads to new knowledge that is significant within the practice of Media Architecture. The chosen approach also shows how practice-led research tools are directly transferable to the actual design process through concept workshops and prototype generation. Reflective visualisation methods thus become an applicable outcome in reflective design practice.

1.2 Background, Motivation, Audience

The focal point of this research study is rooted in the author's background in spatial communication and interaction design, continuing research interest in digitally augmented environments and experience as a practitioner, educator and researcher¹. Completing a Master's thesis at the London College of Communication on "Responsive Surfaces as Interface to the City" in 2004 led to an initial in-depth contact with digital interactive media as a transformative instance in an architectural and spatial context. As a professional practitioner and design director for interaction design, the author has been involved in various projects dealing with "digital space" along this axis of temporary media art projects and interactive branding. Practice in these areas tends to be highly interdisciplinary, involving branding specialists, architects, interaction designers or digital developers. While such projects often strive for novel user "experiences" within physical-digital spaces, there are no specific interdisciplinary methodologies affording a user-oriented experience design, specifically for more permanent installations of Media Architecture.

By practically exploring the field through professional work and critical reflection on applied design methods, the author's academic interest in this design field arose from reading Mirjam Struppek's early work on urban screens (Struppek 2006), with a focus on new qualities of visual communication (Jewitt & Triggs 2006). The first conferences dedicated to Media Architecture and urban screens took place as informal gatherings of academics and industry professionals². The subject provided prominent, real-world examples of discourse on the digital city and how public spaces are being visually transformed by digital media and its visual and interactive implications (Mitchell 1995; 1999). "Fluid" digital media and the networked society (Castells 1996) manifest themselves in built, visual structures and allow buildings to exhibit immediate behaviour responses to surrounding scenarios.

In considering practice-led PhD research in 2008, the author was able to root personal motivations stemming from his individual practice background in a wider and rigorous academic context for further examination and community review. However, after eight years of part-time study, the problem addressed by this research question is also relevant to a wider audience of designers and educators in the areas of spatial communication and Media Architecture. Despite the highly visual and interdisciplinary characteristics of the field, available material on design methodologies is still largely

1 The author has been active as an Interaction Design professional for 15 years and as an educator at various design institutions in Germany, Switzerland and the UK since 2004. www.klausbirk.com

2 As examples: Urban Screens Conference 2005 Amsterdam; Media Architecture Summit London 2007, the first Media Architecture Festival in Berlin 2008

concerned with architecture, human-computer interaction, lighting technology or form-oriented discussions on media integration in public space rather than the use of experiential visual design as a systematic approach to sustained stakeholder participation, which is the subject of this study.

As with any media-related territory, the relatively new field of Media Architecture is changing and adapting continuously to new forms of technological developments. At the outset of this research, for instance, dynamic kinetic façades and large-scale projection mapping technologies were being discussed³ as new forms integrating dynamic qualities with built urban structures. At the time of writing this thesis in 2016, Media Architecture is more concerned with the *Smart City*, civic participation and its place in an urban *Internet of Things (IoT)* (Townsend 2013; Foth et al. 2015). Furthermore, public perception has changed significantly over time, specifically after the worldwide financial crisis in 2008/2009, when large-scale permanent media façade illuminations were increasingly regarded as prominent urban manifestations of costly energy waste. Public acceptance of commercial Media Architecture decreased remarkably during this period⁴.

The practical outcomes of this thesis tie in to these developments and demonstrate a conceptual method framework for reflecting issues of public relevance in relation to the spatial and social integration of Media Architecture. The digital MAA project archive presents rich media content on historical and contemporary projects in the field and documents their characteristics in a specially developed taxonomy. The conceptual design framework provides a methodology to raise acceptance among the general public through early visual and experiential engagement. From a visual communication perspective, this research sets out to provide an initial contribution to the relatively new field of Media Architecture. Based on a constructivist understanding of design processes for/as experience, this research seeks to develop systematic tools for collaboration and experiential design discourse.

These tools form a framework for new inclusive design methods for Media Architecture that can be applied at the early, conceptual project stage. **As such, they contribute new knowledge on the practical use of reflective visual design methods to generate participation and ownership within multi-stakeholder project settings in Media Architecture.**

³ The author participated in the event. For the program and an overview of speakers, see <http://www.mediaarchitecture.org/mediafaçades2008/conference/program/>

⁴ Interview with Els Vermaag, LAB[au] Design Studio, Brussels, 2010, on their work for the Dexia Tower. See Appendix 7.4.2.

1.3 Research Question, Aims and Objectives

The research question guiding this study is:

How can experiential and visual design methods help create multi-stakeholder participation and engagement in Media Architecture?

At the heart of this research study is the question of how a design process can be applied so that multidisciplinary professionals as well as the general public are included in the creation of digitally augmented public spaces. Due to the nature and size of architectural media projects and their settings, planning and development processes usually involve a broad range of professionals and stakeholders. However, in many cases, aspects of visual communication and contextual relevance have garnered less consideration than mere technical or financial feasibility. Despite the prominent presence of Media Architecture in urban settings, its full potential to reflect and communicate aspects of local, urban life and identity is rarely exploited. The methodology framework developed within this research suggests a low-barrier approach to designing architectural media situations. Digital research and prototyping methods help establish a common visual language among professionals and public during early stages of the design process, essentially aiming not only for acceptance but also ownership of Media Architectural spaces.

The aim of this PhD research project is to develop a design methodology reflecting the communicative nature of Media Architecture, thus serving as a base for developing sustainable and engaging communication design concepts. To achieve this main goal, the following objectives have been formulated as part of the research design:

1. Conducting a **literature review of theoretical discourse** about urban digital media spaces and the philosophical perspectives of experiencing (digital) technologies of place making
2. Conducting a **review of practice and current design processes** in Media Architecture
3. Reviewing **design workflows and methods in related fields**, based on occurrences and problems within case studies

4. Defining underlying **patterns of cooperation** in multidisciplinary teams
5. Defining a **methodology based on self-reflection and experiential learning** to inform a design process for Media Architecture
6. Developing a **prototypical framework of visual design methods** for participation and exploring its application within student workshops
7. **Applying and evaluating the framework** in a practical context based on its communicative, participative and experiential relevance

As practice-led research, this study deals with a dichotomy of explicit and tacit knowledge gained from the generation of knowledge through research and its application in practice (Niedderer 2007). As opposed to a practice-based approach to research in fine art and design, where the outcome or work of art is at the centre of the inquiry (University of Technology Sydney 2011), this project initially followed a propositional⁵ understanding of knowledge contribution to the multidisciplinary field of Media Architecture. In a second step, experiential and tacit knowledge from practice (e.g., workshop processes, studio collaborations and outcomes) were used as a means to form evidence for the initial propositional knowledge and its facilitation in practical settings. In doing so, the research process reflects the creative and projective nature of the design process, investigating what *could* be rather than what *is* already existent. This is underlined by the author's focus on the transferability of reflective design methods applied within his own research process. His reflective approach to this research becomes itself a guide to conceptual design practice as a reflective experience in Media Architecture.

5 Following Grayling (2003), Niedderer (2007) described the nature of knowledge as "justified true belief of a proposition". The nature of research traditionally uses linguistic constructions to form propositions and defend arguments. For Niedderer, knowledge in creative and practice-led disciplines is often not explicitly communicable but partly experience-based and difficult to communicate in language oriented research.

1.4 Research Context and Scope

This research study addresses a problem touching on several design strands and fields of study. Understandings of the referenced terms and concepts of experience, media and space vary according to their use in various professional and academic arenas, as well as across individual disciplines. They demand initial clarification to frame the scope of this research project. The following overview sets out to determine the context in which the research is situated.

1.4.1 Media Architecture

As a compound term, “Media Architecture” links two seemingly distinct forms of designed existence: the fluid nature of communication media (Castells 1996) and architecture as the static physical structure of the built urban habitat.

Although the term itself does not imply a certain condition of the “medium”, and one could argue that any architecture bears qualities of a medium carrying (visual) information and functioning in a semiotic condition (Venturi & Scott Brown 2004), in practice, the term is mainly used as a reference to digital media applied to the built environment. There have been considerable efforts made by architects, media designers and software specialists in recent years to combine dynamic media and physical building structures. In many cases, installations are based on visual display systems such as large-screen displays or light-emitting grid structures applied to the façade of a building. Others have applied physical kinetic systems that are used as reflecting surfaces for the applied lighting sources. Integrative examples manage to not only attach but also include such technologies into a building's façade structure as a functional element.

Gernot Tscherteu from the Media Architecture Institute wrote: “Buildings and spatial structures should only be considered Media Architecture if there's an intended and generally recognisable correspondence between the display, its content and the structure of the building. Both media and architecture should not represent two separate levels of meaning, but they should form a common system of reference and refer to each other” (Tscherteu 2007). The emphasis on structural implications of media on architecture was also maintained by Michael Fox and Miles Kemp when talking about Interactive Architecture (Fox & Kemp 2009). Their definition of adaptive and mediated architecture relates mostly to kinetic physical structures with embedded computation that are able to dynamically change built space and adapt to human in -

teraction. Other publications have expressed a strong interest in aspects of architectural lighting and visual transformation, referencing Media Architecture mainly as a form of the virtually extension of an architectural façade element or corporate branding element (Schürer et al. 2008; Haeusler 2009; Haeusler et al. 2012).

There are definitions of Media Architecture hybrids, which focus less on technical or structural characteristics and more on cultural implications. In a 2006 issue of *Visual Communication*, the notion and diverse implications of screens in the social landscape was reviewed by Jewitt and Triggs (2006), who focused on how people communicate and interact in public spaces enriched by digital display technology. Mirjam Struppek, for example, emphasised the socio-cultural aspects of large-screen displays in urban space. Applying the term “urban screens”, she has frequently described architectural media as a possible catalyst for creative exchange and a “well-balanced, sustainable urban society” (Struppek 2010). Ursula Stalder has looked at architectural media from a narrative perspective. In a KTI research project at Luzern University, she identified “Out-of-Home-Displays” as a collective category of high-resolution urban screens encompassing three major aspects of usage: marketing/branding, architectural scenography and digital signage/wayfinding (Stalder & Müller 2006).

Despite the different terms that have been applied, it is evident that Media Architecture reflects and promotes changing human interaction with the built environment. The diverse technical, aesthetic and cultural understandings of Media Architecture⁶ are evidence of a general striving for sustainable architectural media that recognises the constant paradigmatic change of social/urban space.

1.4.2 Design of Public Spaces

Public spaces are an important element of social urban space as they are the “arena” for Media Architecture. After places such as the home or workplace, public spaces are the most prominent built elements for urban dwellers. Public spaces are open social spaces that are accessible to everyone, regardless of their social, political or religious background. Commons, gathering places, town squares and parks allow people to meet and exchange ideas, “maintain social ties and (...) engage in discussion and debate” (Foth & Sanders 2008, p.73). They are places where local culture can be expressed and observed. As elements of communities and urban life, the historic roots of public spaces lie in places of assembly, such as the ancient Greek *Agora* or Roman

⁶ During the contextual review of literature and practice, a database of Media Architecture projects was set up and has been maintained to document examples in reference to the diverse understandings of the term.

Forum. Streets and roads can be seen as the threads of urban public space, aligning bounding buildings (private spaces) and connecting public focal points and hubs. Kevin Lynch famously identified these *paths*, *edges* and *nodes* as the basic elements for the human understanding of urban space (Lynch 1960). This understanding is thus relevant to any urban design as it is concerned not only with “visual-artistic” qualities but also the “social-usage” of spaces and buildings, with a focus on people, places and activities as major guidelines (Carmona et al. 2003). Community-oriented urban design strategies engage with users of the environment and develop proposals on a grassroots level. In this context, McGlynn et al. talked about public spaces as “responsive environments”, meaning democratic and enriching environments that maximise the degree of choice in how they are used through qualities such as permeability, variety, legibility and robustness (Mitchell 1995).

The notion of democratic and enriching responsiveness seems even more relevant when considering digital technologies, ubiquitous communications and mobile internet. Public spaces become hybrid spaces. Urban residents can transfer and expand the traditional notion of physical public space to a space of social interaction with digital counterparts. Location-based social media services are bridging online interactions and local face-to-face communication to allow people to connect and negotiate meetings at any time, in any place. The term “globalisation” has been coined to describe this (Wellman 2002). This development leads to the question of how public media spaces can be designed to facilitate the increasingly “fluid, swarming social behaviour” of city dwellers (Foth & Sanders 2008, p.6).

1.4.3 Experience Design

Experiences are elementary for the design of products and situations. They are described as “the sensation of interaction with a product, service, or event, over time, and on both physical and cognitive levels” (Shedroff 2011). Similarly, when analysing emotional human responses to designed objects, Don Norman defined the experience of products as encompassing “all aspects of the user’s interaction with the product: how it is perceived, learned and used” (Norman 2003). Experiences are subjective states of mind and are influenced by various external and internal factors and their interrelations. This includes not only a user’s psychological state and his beliefs and expectations but also the experienced object or physical situation itself as well as other individuals. This relationship between self, object, circumstances and personal background was described by pragmatist philosopher John Dewey as a constant process of sense-making (Dewey 1980).

Experience design focuses on the interactions between objects and people. It builds on the assumption that “the elements that contribute to superior experiences are knowable and reproducible, which makes them designable” (Shedroff 2011). It pays attention to all aspects of experiencing a product or service. These aspects can be physical, sensual, cognitive, emotional or aesthetic (Battarbee & Forlizzi 2004). Most definitions of experience design also share a recognition of the subjectivity of User Experience (UX), as it is “affected by the user’s internal state, the context, and perceptions of the product (...)” (Väänänen-Vainio-Mattila et al. 2008).

Specific areas of design research are active in developing an understanding of experiences resulting from interaction with products or situations. Recent years have seen methods for experience design being increasingly applied in broad areas of design practice. Often, these methods are rooted in ethnography or social and behavioural science. Adapted for application within a design context, they are intended to gain access to the latent needs or desires a user may have, thus informing or inspiring the designer’s implicit design knowledge. As experiences include a range of sensory perceptions and impressions, designing for experience is often a shared activity within a multidisciplinary design team, including, for instance, UX designers, UX researchers and developers.

In the course of the contextual review described in Chapter 2, Sections 2.3 and 2.4 further discusses the diverse understandings of experiential design processes from product, interaction and service design and potential methodologies that can be used with publicly exposed urban media environments. Here, the conceptual idea of local, situated knowledge and expectations is of interest, specifically, how Dewey’s (1934) pragmatic approach to experience represents valuable groundwork for practice-led inquiry.

1.4.4 Reflective Practice

Tying in with Dewey’s (1934) notion of experience as a process of continuous sense-making, this research study also concentrates on aspects of reflection in and on spaces and spatial experiences. It draws on characteristics of language and discourse in urban environments (Scollon & Scollon 2003). In analysing the meaning of analogue and digital signs, texts and images based on their specific geographic location in the physical world, Scollon and Scollon constructed a framework of meaning-making in built urban spaces. This framework identified four aspects as central to the understanding of human activity in a discursive space, such as the city: the social

actor, the interaction order, visual semiotics and place semiotics. In their geosemiotic framework, these elements are described as interlinked characteristics for socio-spatial activity and discourse.

In light of the proposition of this research to rethink the design process for Media Architecture as a potential activator of social urban space, the context of this study also encompasses discourse as both a source and outcome of reflective practical design activity. Research on design as practice-oriented activity for knowledge generation has been explored extensively (Alexander 1964; Schön 1983; Cross 2007; Lawson 2006; Thackara 2005). Processes of experimentation, creative adaptation and reflection are a basic characteristic of design activities. Schön's concept of reflective practice, for instance, places a systematic procedure of shifting from doing to reflecting and vice versa at the centre of any practice-related action. Central to this is an attitude of questioning, of understanding design as a language open to discourse through models and prototypical elaborations. Models and prototypes are an essential element of understanding design as a reflective conversation that allows engagement in a practical discourse. As a form of operational language, models and prototypes allow the expression of individual thoughts to other stakeholders in highly discursive processes (Krippendorff 2006; Gänshirt 2007).

This notion of prototyping is extendable to a general perception of systematic action and methods as means to foster reflective attitudes and discursive exchange (Löwgren & Stolterman 2007). Specifically, modes of inclusive design procedures (Hippel 2006) and the integration of stakeholders in actual design collaboration provide a contextual base for discussing opportunities and options for evaluation as well as facilitating change in larger or more complex project constellations, as is often the case in Media Architecture. Design action in this sense is discussed as conversation—listening, presenting arguments, adopting certain positions and not supporting others. Similar to notions from experiential learning theory, this involves understanding based on practical, concrete experience. The thesis thus also investigates experiential interdisciplinary learning and the opportunities it presents to engage various knowledge levels through experiential design activity and reflection (Kolb 1983; Meyer & Land 2003).

Finally, the nature of this research study itself represents a contextual reference to research practice and is discussed in terms of the application of a methodology of reflection on and through design action. The author references reflective procedures from his own research journey and introduces a conceptual model for design reflection as well as visual research tools that are driven by his own reflective design prac-

tice. The conceptual research approach and the tools applied by the researcher are themselves suggested as facilitating means of reflective action in early stage Media Architectural design processes.

1.4.5 Extended Territories

In general, this thesis is concerned with modes of design arising from recent developments in the fields of digital and “smart” cities and urban informatics. While primarily focusing on reflective design methodology for Media Architecture, as an interdisciplinary approach it automatically touches on a broader range of research subjects. These cannot be discussed in detail within the scope of this thesis. However, as contextual fields of study they are referenced here for further investigation:

- *Digital literacy*

With the advancement of digital technologies and their integration in everyday life, there is a general discussion of the ways people actually cope with and comprehend the basic principles of current technological developments (e.g., sensor networks, the IoT, big data) and how informed active participation can be achieved on a broader scale. For instance, Anthony Townsend, Director of Urban Research at *New York University's Rudin Center for Transportation*, has discussed the social implications of smart cities, participatory digital media environments and civic hacking in urban contexts (Townsend 2013). In this respect, work is being developed at various academic institutes, for instance, *Massachusetts Institute of Technology (Senseable City Lab)* and *Queensland University of Technology (Research Centre for Urban Informatics)*. Here, researchers are investigating the potential of digital literacy (Offenhuber & Ratti 2014) and civic agency (Foth et al. 2015) within the ubiquity of sensor networks in urban environments. Implications for an understanding of digital literacy for urban environments have also been discussed by the author (Birk 2015).

- *Semiotic systems, learning and discourse*

Experiential learning and its constructivist roots provide gainful relations to systemic approaches in communication and learning theory. For instance, Pask (1975), and later Glanville (1999), formulated basic principles for an understanding of design as discourse and the specificity of design artefacts as a catalyst for communication. This bears similarities to the notion of actants as material objects in a semiotic network of humans and things (Latour 1996). While this study does not necessarily emphasise the implications in sociolo-

gical terms as defined by Latour, how the author talks about materialised knowledge and how knowledge is always conveyed through material as “immutable mobiles” (Latour 2011) is interesting in relation to learning theory. For instance, Lorenz and Staub related this line of thought to their work and research at the *Architectural Association* in London when discussing perspectives of mediating architecture and representational form in the communication of architectural design processes (Lorenz & Staub 2011).

- *Design research and practice*

There is a broad spectrum of discourse about the nature and characteristics of design as a research activity. By its nature as a practice-oriented research approach, this thesis takes into account the various strands of research on, for and through design. Building on the 1960s modernist perspective of design activities as utilitarian systematic methods, today there is again a wider theoretical discourse about the definition and validation of design as an academic discipline with its own practice- and theory-oriented foundations. In this respect, this thesis touches on design-specific strategies of problem solving (Jonas 2006; Findeli et al. 2008; Buchanan 1998; based on Rittel 1988) as well as aspects of implicit, designerly ways of knowledge creation (Cross 2001; based on Polanyi 1974). Current general discourse around practice-based methodologies of reflection and evaluation of design results has been referenced in publications and symposia organised, for instance, by the *DGTF* (Deutsche Gesellschaft für Designtheorie und Forschung) (Mareis et al. 2010).

1.5 Methods

This study is a practice-led inquiry into an applied design methodology for Media Architecture that is aimed at both an understanding of the creation processes as well as the shaping of final output through means of design. The study oscillates between two complementary research conditions that are cast as modes of contextual review and consecutive modes of practice-led activity and evaluation.

1.5.1 Research Structure



Illustration 1.1: Charting the research process (3): Iterative stages and theory-practice feedback loop in the thesis process, July 2016. For a larger version of this mapping, see Appendix (Illustration 7.1).

The structure of this thesis corresponds with the reflective research process and thematic structure underpinning this study (see Illustration 1.1 & 7.1). Chapter 2, 3 and 4 each represent a thematic block: Media Architecture Space; Design Discourse Learning; Reflective Framework Ownership. Similar to how each of the named chapters connects theoretical research with “Reflections through Design Practice”, each block in the visualisation is a compound formation of theoretical and practical exploration (two blue areas). These areas are informing each other iteratively, eventually leading to the next thematic block. While this implies a linear system with incremental stages, the thematic issues raised are variably interlinked across the blocks,

depending on how they have been informing particular issues during the study. The mapping schema reflects the practice-oriented nature of the PhD research and provided a structural skeleton for this thesis.

Over the course of the study, this iterative research structure and its application of visual design methods for review and practice evolved to provide the conceptual and practical foundation for the reflective design methodology and tools proposed in Chapter 4.

1.5.2 Modes of Review

Diagnostic Research

To acquire an understanding of the current field of practice and the related design processes, a combination of **diagnostic research tools such as semi-structured interviews with practitioners, site observations and studio visits** served as initial tools for research. Since October 2008, there was a busy exchange with designers, artists, studios and academics through discussions and correspondence as well as through peer reviews within conference settings.

Theoretical Contextualisation

A **review of primary and secondary literature sources** served as a means of contextualising findings from diagnostic studies. Conversely, it allowed the specification, elaboration and adaptation of diagnostic tools and thus continuously and critically informed the shape of this research. Topics for review include digital architecture, urban planning, urban informatics and design for interaction, particularly experience design, as well as participatory and human-centred strategies in design. Historical and philosophical texts on digital and physical space, dialogicality and pragmatist experience underpin this area of the research.

Charting and Visualising Research

In a **continuous mapping and documentation process**, an online database of relevant work in the field was initiated in 2009 to serve as a growing resource of practice examples. For the purpose of this thesis, an exemplary list of 120 projects from 1900-2014 are documented. Based on sets of characteristics such as usage, context, content and technology, this database supports the research process in several ways. Initially, it was used as a dossier of Media Architectural work, charting the diversity of visual, technical and interactive applications. Additionally, this collection also served

as a test-bed for evaluating statements in theoretical literature on the subject. In the following practice-led phase, the database became a medium that could be accessed and consulted during workshops and practice-oriented research studies.

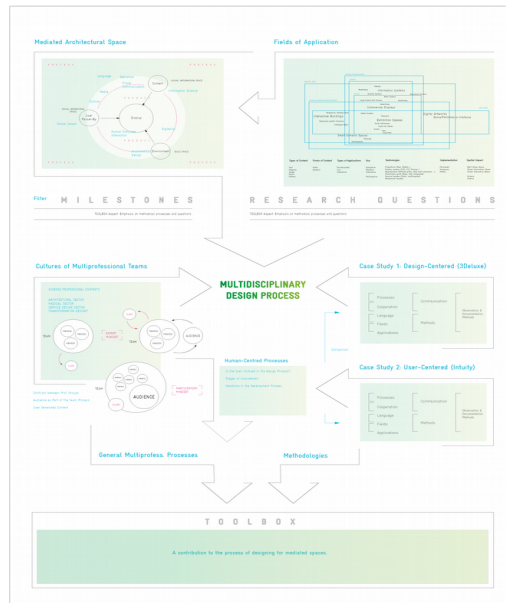


Illustration 1.2: Example of visual methods to map the research: Charting the research process (1) – process and dependencies (06/2009).

During the review process, graphic visualisation methods were applied to chart relevant strands of literature and corresponding conceptual models. This graphical method was also used to document and rework the overall research process in a recurring manner, following the pragmatic concept of defining action as an element of understanding and creating knowledge (Dewey 1934; Ewenstein & Whyte 2009; Nelson & Stolterman 2012).

Synthesis

The graphical methods of charting and documenting the process described above were applied as iterative tools for structuring and re-structuring the “propositional” focus of the research (Niedderer 2007). The process of synthesis operates as an instrument of continuous re-adjustment, similar to the circular and iterative nature of the human-centred design process⁷. Findings were aggregated textually and graphically in relation to the initial research question and led to, for example, workshop and conference papers on thematic subsections for peer-review. Professional and academic feedback helped in refining the narrative structure of the argument underlying

⁷ The human-centred design process is an international standard (ISO 13407) recognising the development of products as a cyclic process of constant refinement throughout the planning, design and development phases. A description and visualisation is given at the [Usability Professionals Association \(UPA\) website](#).

the initial proposition. On a second level, this review process led to the recognition of originally internal research tools as actual design research outcome themselves (e.g., the MAA project archive, see 2.5.4).

1.5.3 Modes of Practice

Action Research

The complementary part of the diagnostic research and reviews of literature and practice followed an action research approach (Lewin 1946; Schön 1983). As described in the *AHRC Practice-led Review 2007*, the goal of action research is “informed action based on knowledge and understanding” (Rust et al. 2007). Although action research is sometimes criticised by quantitative research for its seeming lack of academic rigour and its often problematic evaluation compared to empirical studies, it is able to provide a rich source of information that is of high practical relevance. This is especially true when analysing creative design processes and the experiential knowledge gained from such processes. Here, practice serves not only as a test-bed for initially articulated propositional knowledge but also as an element for creating experiential or tacit knowledge in creative processes, where language alone is too limited for a holistic account (Biggs 2004a; Wilkie 2010).

Technical Investigation

This part involved an investigation into technical processes of visual and experiential prototyping. Modes of technical investigation encompass tools for visual representation, exploration, interaction, spatial modelling and experiential field research. This investigation was intended to collect samples and develop coding and visualisation sketches, photo documentaries and model prototypes. It represents a spectrum of visualisation/creation methods that led to a set of digital and physical tools to be applied and tested in workshop situations.

Evaluation and Refinement

Action research is situation specific and difficult to generalise (Archer 1995), which often exposes it to critiques of subjectivity and limited academic applicability. However, the assumption here is that knowledge originating from designed artefacts, through experimentation, can be generalised as design specifications for future applications or in new theory or frameworks (Frens 2007). An initial series of student and professional workshops were used as a testing ground for modelling tools and investigating their ability to serve as a medium for communication among diverse stakeholders. These workshops took place within the academic curricular context of

the *DHBW – Media Design Studies*⁸ course as a BA cross-media teaching module as well as in professional environments, at specialist conferences and in real-world studio collaborations. Subsequent workshops were held with peers and practitioners in the field as part of the *Media Architecture Biennale 2010/2012*⁹. Studios cooperating on professional workshop constellations included *MESO Frankfurt*¹⁰, *Intuity Media Lab Stuttgart*¹¹, *ARTxMEDIA*¹² and *Jason Bruges Studios*¹³. The workshops created an active and participatory climate to test the suggested methods and tools, which were integrated with processes of conception, creation and exchange in multidisciplinary environments, serving as a means of design communication among the workshop participants. The workshops were documented and evaluated in terms of the stakeholders' original expectations, the creative process and the output generated from these sessions. The results were fed into a refinement/redesign that is subject to further reviews and testing.

Related Presentations, Publications and Academic Activities

In an additional process of academic evaluation and feedback, the author was able to disseminate parts of the research at various stages over the course of this PhD and engage with the research and design community. This included presentations, publications and academic activities.

“Urban Digital Literacy – Reading and Writing the Digital City”	21 st Leipzig Typodays 2015, Leipzig Germany, Invited Speaker 8-9 May 2015, Museum für Druckkunst Leipzig, Germany
“Beyond the device”	form Design Magazine, no. 258, 2015, pp. 36 Journal Article
“Digital Material”	Design der Zukunft – Alles postdigital? Guest Lecture TFM Institute, University of Vienna, Austria, 22 January 2015 Chair: Jana Herwig, University of Vienna, Austria

⁸ Duale Hochschule Baden-Württemberg (DHBW) is a practice-oriented university in Germany, where the author currently heads the Media Design Department.

⁹ Media Architecture Biennale: <http://mab12.mediaarchitecture.org>

¹⁰ MESO – Unimpressed by Technology since 1982 <http://meso.net/>

¹¹ Intuity Media Lab – Creating User Experience <http://www.intuity.de/>

¹² ARTxMEDIA – Spatial Communication <http://artxmedia.de>

¹³ Jason Bruges Studios <http://www.jasonbruges.com/>

<i>“Stop Asking – Start Questioning”</i>	in Cornelia Lund and Holger Lund (ed.), Design der Zukunft (Ludwigsburg: avedition, 2014)	Book Chapter
<i>“(Proto-)Type”</i>	Webfontday 2012 – Munich, Germany, 10 November 2012 Hosted by: TGM Munich, Germany	Invited Speaker
<i>“Lessons for Design”</i>	Media Architecture Biennale 2012 – Aarhus, Denmark, 15-17 November 2012, Media Architecture Institute and Aarhus University, Denmark	Paper Session Chair
<i>“Prototyping for Ownership”</i>	Media Architecture Biennale 2012 – Aarhus, Denmark, 15-17 November 2012, Media Architecture Institute and Aarhus University, Denmark	Workshop
<i>“Stop Asking – Start Questioning”</i>	Design der Zukunft – Symposium 2012, 2-3 June 2012, Duale Hochschule Baden-Württemberg Ravensburg, Studiengang Mediendesign, Germany	Conference Paper
<i>“Built Information: Designing for Experience in Public Media Spaces”</i>	RNUAL Spring Research Symposium: Presentation, 14th Feb 2011, University of the Arts, London, UK	Academic Seminar
<i>“Designing Dialogue in Media Architecture”</i>	Fourth International Conference on Design Computing and Cognition DCC10 Workshop: Design Communication, 10 July 2010, hosted by: University of Stuttgart, Germany and Krasnow Institute at George Mason University, VA	Conference Paper
<i>“Designing Social Interaction Spaces”</i>	<i>Space: The Real and the Abstract – PhD Student Conference, July 6th 2010, The Centre for Art, Design Research and Experimentation (CADRE), School of Art and Design, University of Wolverhampton, UK</i>	Accepted Conference Paper
<i>Built Information: Visual Communication in Digitally Augmented Public Space</i>	MRes Information Environments, LCC, 28 January, 2010, University of the Arts, London, UK	Guest Lecture

<i>“Spatial experience rather than large screens – designing for mediated architecture”</i>	The Planetary Collegium’s Xth International Research Conference: Experiencing Design – Behaving Media, 19 – 22 November 2009, hosted by MHMK University of Applied Sciences Munich, Germany	Conference Paper
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Table 1: Presentations, publications and academic activities. See also Appendix Section 7.5.

1.6 Thesis Overview

The research presented in this thesis was conducted on a part-time basis over an extended period of time and involved an iterative process of oscillating between theoretical research, practical experimentation and design action. The thesis itself reflects these characteristics leading up to the presentation of key findings. The following overview shows how this process has coined the structure of the thesis and how connects the thematic sections.

The thesis structure essentially follows the three main stages of research. The first stage is described in Chapter 2 Setting the Scene — Context and Classifications. This chapter lays out the preliminary research context by clarifying contextual notions of Media Space and Media Experience as well as discussing their particular meaning for Media Architecture in theory and practice. The chapter examines existing classifications and perceptions of space (i.e., *built, visual, social, networked space*), notably with regard to their experiential qualities. Based on the notion of *shared experience* as a central motive in digital urban design, it goes on to reflect on Media Architecture as a collective experiential stage. This is done by applying both sources from the literature and practical design studies.

The second part of research is discussed in *Chapter 3 Shifting Focus — Designing (for) Discourse*. In light of the previous notion of collective, joint experiences of urban media, this chapter turns to design as a catalyst for exchange and discourse. The chapter reflects on visual design methods for enabling as well as provoking discourse and participation in multi-stakeholder environments. These methods are then correlated to the meaning of experience, conversation and reflection within the broader scope of learning and capacity-building processes.

Based again on a series of practical work on the redesign and definition of processes for reflection, *Chapter 4 Proposition — A Reflective Methodology* describes a related methods framework for reflective design tools within the Media Architectural design process. Its application is embedded in a self-reflective procedure that comprises phases of contextualisation, inclusion, envisioning and assessment. The chapter makes a practice-oriented case for how a tool initially conceived as a self-reflective research tool becomes part of an actual practical design outcome, supporting self-reflection in a multi-stakeholder design process.

In light of the practice-led nature of this research, each of these three main chapters are structured with two subsequent phases of theoretical and practical reflection (see Illustration 1.1). Insights from theoretical sources or methods-oriented literature as well as secondary and primary research are related to observations through practice, for instance, design prototypes, workshop setups or process visualisations. As a combined description of both research *on* and *through* practice, each chapter relates individual evaluations from theory to practice and vice versa. Building on the above overview of the basic thesis structure, the following paragraphs provide an introduction to the main lines of reasoning within each chapter.

Chapter 2: Setting the Scene — Context and Classifications

This chapter seeks to establish the contextual framework, building the theoretical and practical foundations for this research. The research is positioned at the intersection of experience design, interactive Media Architecture and public spaces, which are introduced as general research areas in the Introduction (see 1.4). Based on these definitions, the chapter goes on to discuss Media Space as a conceptual idea, integrating perspectives on digital media as actants (Latour 1996) enabling communication but acting transformatively in relation to built, visual, social and networked space. It is shown that despite the “time-space-compression” of digitally networked societies, a new re-affirmation of physical reality is taking place through location-based information and objectified sensor networks such as the IoT. However, it is not only our visual impression of built environments that is shaped by media. Architecture itself visually represents meaning and uses iconography as a vehicle to communicate in a socio-political sense (Venturi & Scott Brown 2004; McQuire 2008a). As digital media make the leap into spatial environments, urban media spaces facilitate bi-directional negotiation and discourses on place (Scollon & Scollon 2003). There is a potential for external stakeholders to be affected by spatial media so that they engage and add “local tacit knowledge” to the design of digitally networked spatial environments (Crang et al. 2007). In fact, these social dynamics add to the notion of mediating processes in Actor-Network-Theory (ANT) networks and the constantly transitional state of media space as a “worknet” (Lorenz 2011) in built, visual and social space.

The following section takes a closer look at these transitional dynamics by emphasising media experience and the facilitation of human action and interaction through and with media. Based on approaches to experience design, three major perspectives are identified as focusing on the experience of a product, user or interaction (Battarbee & Forlizzi 2004). There is an increasing shift from designing things to designing experiences, which involves a dialogical and contextual understanding of users and their environment. This contextual perspective is discussed through the notion of technology as experience (McCarthy & Wright 2004; Dourish 2004) as well as through

dedicated strategies for contextually aware design such as participatory, ethno-graphic and critical design approaches. The notion of co-experience leads to a discussion of multidisciplinary design procedures (Chaszar 2006; Wilson & Pirie 2000) and “designerly language” tools (Sleeswijk Visser et al. 2005) for collaboration and shared awareness in experiential design processes. Based on this notion of co-experience and collaboration, Media Architecture itself is discussed as a form of shared experience through dynamic, adaptive environments. Coming from digitally enhanced conceptual architecture and its utopian roots and failures in the 1960s, it is argued that adaptation should focus less on individual choice and more on shared social interaction and negotiation. Still a part of individual experience of urban space, a collective approach recognises and builds capacity in citizens to shape their surroundings. Adaptive environments thus bear the potential to move from Media Architecture FOR people to Media Architecture WITH people. However, to use this potential, actual desire is identified as a major prerequisite and emotional requirement for actual participation, leaving room for unexpected contributions.

Building on these initial considerations from the literature, a first set of practical methods is used and contextualised to test and expand on the subject from a design perspective. Reflections through practice include an analysis of classification models of Media Architecture based on formal characteristics such as applied technology, architectural parameters and spatial integration as well as an overview of communication of content and the resulting overall purpose of Media Architecture installations. These classification models by researchers/practitioners (Sauter 2004; Brignull 2005; Fatah gen. Schieck 2006; Schoch 2007) are put into context for initial analysis. Communication design methods for conceptual visual mapping and charting are used as designerly ways of relating contextual research and literature with examples of Media Architecture practice. Primary research is used to gather insights through interviews with leading professionals in the field to discuss theoretical insights in relation to prevalent modes of practice and the specific experiences and constellations within multidisciplinary teams. Insights from these interviews are shared and discussed through a research blog¹⁴, conferences and presentations¹⁵ of initial findings from literature/practice. The early conceptual visualisations from an overview of Media Architecture led to an initial prototype of an interactive, searchable project archive as a designed research tool. From the synthesis of the above-mentioned theoretical and practical examinations, the notion of shared experience and participation emerged as a key subject for further discussion. In this respect, design practice has been applied and recognised as a possible vehicle and tool for reflection on the design process itself.

14 Built Information blog: www.built-information.org

15 See Appendix 7.5 on attended conferences, papers and contributions.

Chapter 3 Shifting Focus — Designing (for) Discourse further examines the strand of shared experience and participation and looks generally at basic characteristics and preconditions of discourse in design processes and related experiential design practice. By showing that the creative process generally builds on discursive models as a condition for nurturing ideation as well as collaboration and exchange within professional constellations, it is argued that the design process can provide tools (Gänshirt 2007) to form a materialising and materialised language to engage with diverse professional and non-professional stakeholders. Recent developments in DIY modelling and prototyping are identified as potential capacity-building strategies among professional and non-professional stakeholders (see Section 2.4.2). Following Gänshirt, a discursive approach to model-making works on three levels: First, it is a professional, designerly tool for ideation, testing hypotheses in terms of functionality, materiality and contextual impact (Gänshirt’s “visual-spatial tools”). Second, it can be a tool of cooperation, allowing a more informed dialogue and negotiation within creative collaboration (Schön 1983; McDonnell 2009). It creates physical arguments to agree, oppose and, most importantly, build upon Gänshirt’s “gestures” to articulate ideas based on Flusser (1991). This is also true for the third level of communication, which conveys an idea or its proposed manifestation to an external party or stakeholder (Gänshirt’s “verbal tools”) in order to create enthusiasm (Wilkie 2010) by constructively embodying collective expectations. This constructivist perspective of model-making as language and discourse in creative processes (Schön 1983) is complemented by the expansion of conversational learning as a specific perspective on design communication. In looking at the learning experience as a conversational model (Pask 1975; Kolb 1983), experiential and discursive approaches are shown as principles to build and foster individual capacities. Responsibility and ownership are part of experiential learning processes through the adoption of troublesome knowledge, not only in terms of fact-based knowledge or methods but also as a way of embracing the concept of taking action (Perkins 1999). The relevance of creating Media Architectural experiences is demonstrated in the conceptual idea of building individual capacities in urban design processes (Lange & Waal 2013) by collectively exploring and extending individual (troublesome) knowledge margins through a conversational action design model.

Based on these theoretical sources, the second part of the chapter adds practical reflections on design (for) discourse: general methodological approaches to reflection in design practice are translated to formulate requirements for a conceptual method toolbox for Media Architecture. The prototype of the MAA developed during the first stage is redesigned and complemented by functionalities for staging access and participation within a collaborative workshop scenario. Drawing on the designerly process of reflection through visualisation, options for visual browsing and interactive

information graphics are added as a way to identify connections across projects and current practice. Reflective practice at this stage also included a collaborative workshop using the digital archive as well as participatory ideation methods based on experiential and conversational learning processes. The workshop structure was framed around the subject of participation/ownership, applying collaborative ideation, prototyping and visualisation methods at several stages throughout the workshops (see 3.5.3 and 3.5.2). Following an experiential learning approach in multidisciplinary teams, the workshop structure used the MAA and corresponding visual prototyping stages for contextualising Media Architecture concepts. The ideation method of “story framing” was introduced as a conceptual design method to articulate Media Architecture scenarios on a visually descriptive level. Lo-fi interactive prototyping added an additional experiential learning stage to harness multi-disciplinarity and individual skills of participants. Based on a review of this initial workshop setup, the thesis relates results and practical outcomes to aspects of conversational learning. Visual and lo-fi interactive prototyping as a form of conversational and experiential learning within multi-professional teams is analysed and evaluated based on the theoretical requirements of discourse and capacity building discussed in Chapter 3. In the light of the reflective research approach of this project, this analysis is again executed through a series of schematic visualisations illustrating modes of practice and progress.

The chapter concludes that the provided strategies of design communication and prototyping can add valuable insights for both participants as well as workshop initiators in the described setup. As a conversational learning approach, the strategies help individuals of diverse backgrounds access and exchange contextual project information on a given design situation in an effective way. Additionally, conceptual visualisation and prototyping tools help with acquisition of a certain visual repertoire that can be put to use during conversations among participants. They add to a reflective notion of the diverse perspectives involved in developing and owning a common idea. Finally, they are identified as a structuring means for the workshop process, allowing individuals to deepen specific interests and develop ownership for certain tasks during the process.

In *Chapter 4: Proposition — A Reflective Methodology*, the thesis builds on the previous discussion of design as/for discourse and the application of tools for conversing and reflecting within a series of conceptual design workshops. In light of the theoretical and practical considerations of communication and design processes as both a tool AND an outcome, the chapter suggests the elaboration and refinement of the MAA as an essential instrument for a reflective multi-stakeholder design process in Media Architecture. Therefore, a self-reflective learning-procedure is suggested that incor-

porates the conceptual notion of threshold knowledge within Media Architectural design as an experiential learning process (Kolb 1983; Meyer & Land 2003). The MAA itself adds to this meta structure as a visual interactive tool that is structured and designed to allow its application in several stages of a self-reflective design procedure, from contextualisation and inclusion of stakeholder perspectives to an inspirational source for envisioning and provoking new conceptual forms of participation in Media Architecture. On another level, this chapter argues that the process of self-reflection through design (like the one proposed) eventually also leads to reflection-oriented outcomes for provoking engagement through thoughtful and multi-profession participatory practice.

For this reason, the MAA database is embedded into a conceptual methods framework for participatory design ideation in Media Architectural processes. This database reflects the idea of constructing ownership through the recognition and leveraging of areas of shared, troublesome knowledge and experience-oriented participation. Again, this theoretical concept is challenged and complemented by a practical reflection stage. The concept of the database is changed to become a living document that grows through contributive workshops. To be useful as a design outcome targeted at multidisciplinary and participatory team situations, the MAA database structure as well as the functional and interactive design of the interface were redesigned¹⁶. This allowed added user management to provide options for public interaction and contributions to the archive. A mobile application for the MAA was provided to participants for use on their individual devices during participatory field trips. This was provided through an entirely device-independent and responsive design approach accessible through smartphones and tablets. Additionally, the collaborative ideation and prototyping elements applied during workshops to frame the MAA were reworked as a guided methods framework for individual workshop applications. This framework is based on the four experiential learning stages and contributes to the MAA by providing a method description as well as visually designed guidelines and paper prototyping templates for flexible integration into a given workshop process (see Error: Reference source not found).

This practical revision of design research tools as physical outcomes of research also leads to an overall restructured classification model of Media Architecture. In focusing on potential for creating civic participation within public spaces during the research process, the outcome itself reflects on this issue and adds ownership as a discursive perspective to the taxonomy of Media Architecture and its perception as a situated

¹⁶ The re-development was based on the MEAN dev stack and uses mongoDB with a document-oriented database model.
www.meanjs.org

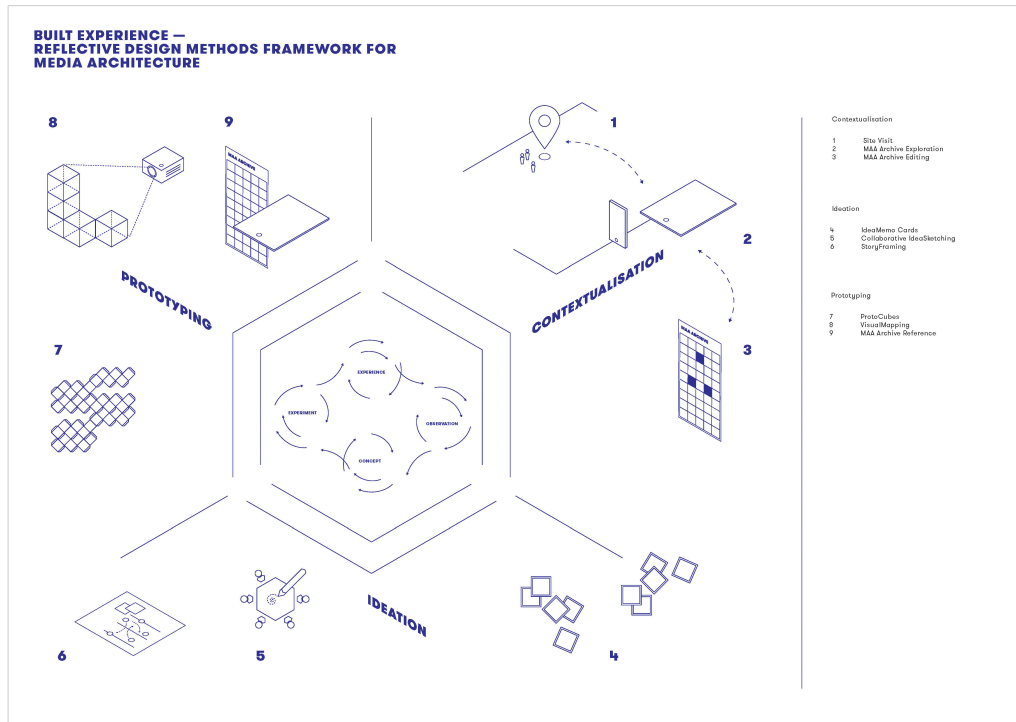


Illustration 1.3: Reflective design methods framework – Schematic overview.

design process. This touches on traditional categories of authorship and artistic lead, as well as the division of technology and content curation and the sociological value of Media Architecture as an environment.

Chapter 5: *Conclusion and Future Work*, reviews the developed guided methods approach for interdisciplinary conceptual design workshops. It summarises the practical outcomes (MAA and methods framework), and positions them as interactive interrogation and ideation tools that can aid stakeholder involvement at early stages of the conceptual design process for Media Architecture. It shows how over several iterations, the MAA database evolved from an initial research tool for analysis of the theoretical and practical fields into the outcome of a self-reflective design process in Media Architecture itself. In conclusion, it is argued that the described theory and practice-led investigation contributes to our knowledge of how self-reflective learning processes can alter the conceptual design of architectural media content to form an experience-oriented, site-specific process. In a practice-led research process, this is achieved through applying visual design practice as a reflective, designerly strategy throughout the project. The practice orientation evolved on two levels: on one hand, through designing procedural research tools and on the other, using applicable design outcomes in practice.

The chapter shows how schematic visualisations of the research field and research process were designed as a vehicle for connecting and refining hypotheses and lines of thought that lead to a provisional understanding of projects' research specificity and focus. On an additional level, the conclusion articulates how visualisation strategies were also used as tools for discourse to convey and refine systematic approaches within the academic arena through papers and visual presentations, especially during the first and second stages (Chapters 2 and 3) of this research. Initial visual approaches, especially graphic project overviews, led to the development of the first version of the interactive MAA database archive. Originally intended just to visually map the research field, the archive became a tool for interrogation, hypotheses and propositions as well as practice during participatory workshops. The visually oriented approaches helped participants from a broad variety of backgrounds gain a shared overview of the field of practice, as well as a general idea of underlying theoretical concepts that may inform the design process. The gradual opening up of the MAA to form an interactive, collaborative platform during the second and third stages of research was a major component that led to the definition and practical application of tools for research and reflection as well as tools for participation and capacity building. Both theoretical and practical progression of the researchers own reflective design tools helped evolve the conceptual approach from design for discourse to design for responsibility and ownership.

In terms of originality of the research, it is argued that within the field of Media Architecture, there is currently no conceptual design approach for sustainable communication using shared learning/threshold knowledge as the underlying rationale. The chosen reflective approach shows how practice-oriented research, specifically developed design research tools, can transcend to professional practice and provide support in design processes through concept workshops and generation of prototypes as a means of design communication. The reflective tool for research becomes an applicable outcome of reflective design practice. The MAA database is based on a taxonomy derived from the analysis of related literature and conceptual perspectives that define the field of practice. However, the novelty of its application is argued to emerge from the underlying intention not only to document existing projects and their individual qualities through project imagery, textual description and geographic location but also to allow for an informed overview using multi-faceted categorisations and visual information mapping.

2 SETTING THE SCENE — CONTEXT AND CLASSIFICATIONS

2.1 Introduction

The first step in answering the central research question, “*How can experiential and visual design methods help create multi-stakeholder participation and engagement in Media Architecture?*” (see 1.3) is to frame the context of Media Architecture as an urban spatial media experience, specifically with regards to the early conceptual design stages in Media Architecture. In the introduction to this thesis, the main definitions of key terms are introduced within the scope of providing an overview of the contextual territory of the research (see 1.4). In a further step, the following sections expand on the perception of Media Architecture as a spatial, collective experience.

This chapter presents a foundational literature review of theoretical and philosophical discourse on urban digital media and the shared experience of Media Architecture as part of a conceptual media space (see 1.3, objectives 1 and 2). This is complemented by a practice review of Media Architectural classifications as well as primary and secondary research on current early stage design processes and outcomes in the field.

The chapter begins by examining perspectives of contextual notions of Media Space and Media Experience and discussing the meaning of these notions for Media Architecture in theory and practice. The chapter looks at existing classifications and perceptions of space (i.e., built, visual, social and networked space), notably with regard to their experiential qualities. Based on the notion of shared experience and engagement as a central motive in experience and urban design, it goes on to discuss Media Architecture as a collective experiential stage. In the second part, reflections on and through design practice are added to this review. Respective methods are presented and applied both through practice-oriented literature as well as through qualitative methods (interviews; studio visits) and the researcher’s practical design studies (conceptual reflective information visualisations; design of an archive of practice examples).

2.2 Media Space

“Media” is often perceived as an artificial, non-graspable entity that is remote and easily distinguishable from interpersonal or direct exchanges. However, it is deeply embedded in our day-to-day lives, in objects, rooms and environments, as mobile or stationary communication channels, as software or as tangible, mechanical systems. It is used privately as well as publicly and is as small as a wrist-watch or as large as a building. Just as the appearance of a medium influences the transported message, a medium also affects its direct context, be it spatial, relational or connotational. An area in which this is highly visible is Media Architecture. Sheer size, public visibility and often responsive behaviour make it an ample field of study on the relationship of humans and technology and their roles as actors within a digitally networked environment.

Here, the term *Media Architecture* not only represents developments in dynamic architectural lighting and digital screen environments but also comprises built manifestations of networked actor–sensor interfaces as part of the urban infrastructure¹⁷. On one hand, digital media serve as enablers for communication between home, owners, devices and services. On the other hand, these types of situated media can themselves influence the mode, complexity and content of mediated conversations. Media in architecture thus add to the notion of a *media space* as a network of continuous transformations rather than a static communication system. Media space is in flux. Latour considered it as a rather unstable network of actants, objects and subjects, including mediation as an entity of autonomy and agency (Latour 2005). Media not only provide means of presentation and representation. Rather, more essentially, they are a structural element of conversational networks in which objects (or buildings or spaces) literally communicate, negotiate and judge (Lash 1999).

To develop an understanding of the characteristics of space in Media Architecture, the following sections discuss the various spatial perspectives involved in a “mediated” environment.

¹⁷ See, for instance, the progression of IoT developments for both public and private use since the late 2000s.

2.2.1 Built Media Space

As seen from the categorisation efforts outlined in the previous section, the built environment and its settings constitute a central part of the definition and perception of spatially situated digital media applications and their integration into the urban fabric.

The spatial implications of new forms of inter-connectedness have always been discussed controversially. Postmodernism radicalised a notion that has been apparent since the spatial consequences of electrification and railways: the compression of our perception of space and time, possible through developments and advances in travel times. David Harvey's famous "Time-Space-Compression" is being finalised by the shift to digital media technology (Döring 2006). For Marshall McLuhan, electronic media are global extensions of our nervous system, abolishing space and time. Vilem Flusser commented on the advancement of digital networks as the "end of geography" (Flusser 1992, p.31), and Paul Virilio detected a "geostrategic homogenisation of the globe" (Virilio 2006, p.135). From a sociological point of view, Manuel Castells coined the term "space of flows" when describing the major transitional process of the networked society. For him, social and commercial activities are no longer bound to specific places and instead dissolve in the flows of communication within growing information networks (Castells 1996). The opportunities arising from these global information systems have been propagated in what could be described as a form of media hysteria. Although many of the promises of the network society came true with mobile internet access, social media and instant communication platforms, recent years have seen the renunciation of the virtuality and placelessness of these interaction modes.

From a media and social science point of view, Schlögel described a new re-affirmation of the physical reality of the city's network nodes (Schlögel 2003). For him, major political events like the falling Berlin Wall in 1989 or the terror attack of 9/11 act as caesurae on the media landscape and remind us that the discussion around the disappearance of physical space is actually senseless. McQuire added that the rhetoric of the "annihilation of space and time" (McQuire 2008b, p.13) is a common and recurrent pattern in urban planning, transportation and communication sciences. It has been applied to the automobile and individual mass transportation, to telephone and wireless radio networks, to air travel and, finally, to the internet as network structures making spatial contingencies insignificant. In fact, according to Anthony Townsend, in 2004 around 80% of the information available on the internet had a spatial compon -

ent, which continues to increase due to the contemporary increase in location-based services. Referring to Stephen Johnson, he stated that this is the actual key to new forms of digital augmentation of built environments. Any accumulation of “searchable, digital location-based annotation will help amplify the existing character of urban space” (Townsend 2004). This amplification of space is often equalled to “mediated environments”, which are media-induced spaces that allow inhabitants or users to experience layers of added spatial information in much the same way as the natural environment. Fox and Kemp, however, focused on an additional semantic aspect of mediation when referring to environments that act as a middle ground between users’ capabilities and their architectural needs. “Mediated environments intervene, reconcile and arbitrate deficiencies and extend capabilities”. A crucial element of mediated forms of environments may thus be reactive or interactive moments that put people at the centre again. They “need technology that suits them in a physical, cognitive and sensory way”. Fox and Kemp framed such moments as situations of “adaptive control”, which play an important role in Media Architecture (Fox & Kemp 2009, p.123).

In an analysis of specific spatial characteristics in the context of Media Architecture and interaction in urban environments, Fischer and Hornecker (2012) outlined a framework for “urbanHCI” that recognises a range of spatial modes for interaction with built media space. Their approach generally differentiates between modes of display and modes of interaction. *Display Space* is generally defined as areas from which a display can be seen. *Interaction Space* is described as “the space used to carry out a form of communication with the installation” (Fischer & Hornecker 2012, p.310). While often overlapping at changing ratios, these modes break down a physical media space into a subset of five additional relevant spaces. *Potential Interaction Space* describes areas where an interaction between an installation and a user or performer can possibly occur. *Gap Spaces*, on the contrary, are staging spaces that create distance, either between humans and an installation or among users themselves. The framework defines *Social Interaction Spaces* as spaces of shared encounters, or areas where people gather after being attracted by an installation. *Comfort Spaces* are built “near architectural elements” (Fischer & Hornecker 2012, p.313) or structures. They are designed to allow observation of a system and its usage from a safe distance while subconsciously inviting people to dwell in them. Finally, *Activation Spaces*, or Noise Spaces, are characterised as areas from which only a marginal perception of a system is possible. These spaces are not directly controlled. However, from a distance these spaces of partial visibility/audibility still provide potential to trigger curiosity and activate passers-by to approach the installation.

Interestingly, while related to built environments and their interactions, all of the spatial characteristics listed by Fischer and Hornecker depend on certain degrees of visibility and visual representation for triggering engagement. Thus, the following section discusses the appearance and meaning of visual qualities in media spaces.

2.2.2 Visual Media Space

Architecture is a form of representation of meaning. It not only constitutes a structural definition of space but also communicates to its environment through its visual and spatial appearance (Rimmer 1997). How is the notion of visual space recognised in the description of urban media spaces?

Robert Venturi and Denise Scott-Brown traced the history of architecture as a symbolic and iconographic medium to ancient Egyptian architecture, which used carvings and pictorial writing systems on its temples and pylons (Venturi & Scott Brown 2004). In other ancient civilisations, sites of religious importance were ornamented with sculptures, mosaics and symbolic wall paintings, often representing episodes of Greek or Roman mythology. Venturi and Scott-Brown showed that the use of architecture as a form of visual narrative for religious convictions can be found in all of the following periods, from Byzantine interiors and Gothic stained-glass windows to the frescos of the Italian Renaissance and the ceilings of Baroque churches, often indulging in an interplay with three-dimensional perspectives and optical illusions. Visual representation and built structures often formed a unit, where the iconography of the building had great influence on its spatial appearance. Ironically, for Venturi and Scott Brown, architectural iconography has been just as apparent in Modernism (in Russian Constructivism, with its emphasis on integral formal composition) as well as in the commercial arena of early 20th-century American billboard culture. Additionally, symbolic and representative forms of architectural elements have been exploited for radical political purposes, for instance, fascist architecture in Germany and Italy, which abounded in “graphic propaganda carved in stone”.

The examples mentioned above describe an iconic and visually representational notion of architectural iconography that adopts graphical elements as a visual – yet also static – extension of their space-defining physical presence. With the rise of early *new media*, from cinema and moving images to today’s digital network technologies, static structures of urban cityscapes enriched by the transformational qualities of dynamic visual media have fuelled human imagination. Fiction writers, especially since the electrification of cities and public spaces at the end of the 19th century, have described glamorously illuminated urban futures. McQuire explained that large-

scale screens have been featured in numerous examples of science-fiction literature and movies throughout the 20th century— from Fritz Lang's *Metropolis* (1927) and William Cameron Menzies' *Things to Come* (1936) to Truffaut's *Fahrenheit 451* (1966) and more recent blockbusters such as *Blade Runner* (1982 - Ridley Scott), *Total Recall* (1990 - Paul Verhoeven) and *Minority Report* (2002 - Steven Spielberg). Noticeable from these films is the instrumental political use of wall-screens as both being “a symbol and a practical technique of technocratic power” (McQuire 2008b, p.2). From a democratic form of use as proposed in *Things to Come* to serve educational and communicational purposes, and audio-visual one-directional propaganda as in *Fahrenheit 451*, to a dramatic information overflow shown in *Total Recall* or *Minority Report*. Similar to Venturi and Scott Brown's quote about lithified propaganda (see above), these fictional dynamic media applications often act as an amplifier for the architectural representation of power, amalgamating political and commercial brand power.

In studying the design for public interactive community displays, Brignull (2005) examined the ways visual displays actually communicate with space. He found four categories of social properties to be relevant in large public displays: *Information Dissemination*, *Shared Point of Reference*, *Awareness* and *Serendipity*. The first two echo a reference to the aspects of visual representation and iconography in built structures by Venturi and Scott Brown (see above) or McQuire. These properties deal with the large-scale “visual broadcasting of information to people in vicinity” (Brignull 2005, p.25), allowing multiple individuals to have a shared visual point of reference that augments their conversation or current orientation. *Awareness* as a further property, however, is not based only on visual representation or perception. Rather, it is described as generally pervading every form of human interaction with the display screen. Depending on the level of individual awareness, Brignull differentiated between *peripheral awareness activities* in the wider area surrounding a display, *focal awareness activities* such as looking at the screen and being aware of it and, lastly, *direct interaction activities*, meaning the active engagement of individuals or groups with the large display screen. Finally, *serendipity* describes the social property of a public display as being able to bring people together in a common spatial location. This “honey-pot” principle (Brignull & Rogers 2003) creates opportunities for social interaction because people are more likely to bump into each other serendipitously in such visually engaging sites.

These aspects of co-location and conversation catalysed by visual display bring up the question of (media) space as a social entity.

2.2.3 Social (Media) Space

Blockbuster movies like those previously mentioned when discussing McQuire's work create a vivid picture of how urban experiences of the future might build on personalised and interactive brand spaces. Although highly exaggerated and technocratic, much of the mechanics of today's digital brand communications are not highly different from what is described in these movies.

Communication Technology and the Public Sphere

Today, the mediation of built environments is particularly apparent in high-density urban areas with frequent visitors. As numerous visible digital media applications and public screens are being installed for advertising purposes, public centres like New York's Times Square, London's Piccadilly Circus or Shibuya Crossing in Tokyo are ideal for providing large audiences for the display of commercials and dynamic corporate branding sequences. Townsend indicated that such areas are often mediated on several digital levels: the density of mobile devices for communication and GPS orientation in Shibuya and the use of public WiFi as a factor for reviving Union Square in New York are means of digital augmentation of built environments (Townsend 2004). To create immersive experiences, digital communication has made the leap to increasing integration into spatial design and architecture, as can be seen from, for example, OMA's Prada store in New York (McQuire 2008b).

This trend of creating architectural media can be traced to the introduction of electric architectural lighting and its use for urban advertising and corporate architecture. Already in the early 20th century, major brands featured architectural lighting systems, such as the 80,000 light bulbs integrated into the Woolworth Building's façade to promote their newly built corporate headquarters. However, in most cases, brand elements and corporate trademarks would appear as externally attached elements of an existing façade or building, similar to what Venturi called the "decorated shed" (Venturi et al. 1977). "While Venturi fits electronic displays onto his buildings, which closely follow traditional vernacular architecture, this is obviously not the only possible strategy" (Manovich 2006). As Manovich noted, there has been a tendency in the avant-garde retail wing to create intriguing and media-rich spaces and stores for high-end brands, often as a collaboration between leading architects, with interaction between designers and artists. Manovich drew on Otto Riewolt when articulating this process of creating unique spaces for brand promotion as "brand-scaping". The term describes the continuous process of re-invention of the site where goods for consumption are promoted and a constant striving for unique qualities.

One-Way and Two-Way Communication

Today, media in architectural space often serve commercial or one-directional purposes. While on one hand they are tools to create enriched experiences of space and inter-connectedness, on the other hand they are likely to face public critique and be received as highly symbolic representations of affluence, wastefulness or surveillance. McQuire noted that the “problem is not simply the exposure of the previously private or the increased mediation of public space. Rather it is the all-too frequent reduction of the social uses of new media platforms to the possibilities dictated by commercial profit and loss” (McQuire 2008). He made the point that in planning, designing and integrating media in urban environments, new forms of public and private need to be discussed, otherwise urban media will be locked into “an unproductive stricture of voyeurism and narcissism”(McQuire 2008b, p.204).

To understand the mechanics of urban environments and their communicative potential, it is critical to read them as an amalgam of built structures, spatial relations and the dynamic flow of interactions between these. For Barthes, the bi-directional aspect of discourse and constant negotiation between the city and its inhabitants characterise the “language” of the city (Barthes 1985). Karl Schlögel highlighted the participative aspect of this discourse when he argued that although the city may be a readable document, it demands very specific methods of access and decoding, which cannot be accomplished from a desk: “Man versteht beim ‘Lesen von Städten’, dass es sich um eine Metapher handelt und begreift, dass das eigentliche ‘Dokument’ Stadt ganz eigene Praktiken der Erschließung verlangt; man kann eine Stadt nicht am Schreibtisch, nicht durch Lektüre erschliessen” (Schlögel 2003).

In their book “Discourses in place: Language in the material world”, Ron and Suzie Wong Scollon further discuss the idea of the language of a city. In analysing the meaning of analogue and digital signs, texts and images based on their specific geographic location in the physical world, they constructed a framework based on four elements they believe are central to an understanding of human action in “three-dimensional and multiply discursive spaces” (Scollon & Scollon 2003, p.13): First, there is the “social actor”, the human being him- or herself who adds to any action his own previous experience and knowledge as well as interests and motivations. The second element is “interaction order” (after Goffman) and describes the “current, ongoing, ratified (...) set of social relationships” (Scollon & Scollon 2003, p.16) we maintain with other people in our presence and which can also vary based on the individual spatial settings of the interaction. To read and interpret the grammar of the visual design and appearance of objects, people need to be trained in visual literacy, which leads to “visual semiotics” as the third element of a geosemiotic understanding of human action. Fi-

nally, such an action is always situated within a specific physical context, which means “place semiotics” is an important part of meaning-making. The concept of geosemiotics attempts to integrate these aspects into a coherent framework for conceptualising and designing human action within a socio-spatial context.

The understanding of human activity as influencing architectural or urban design processes is certainly not new. Just as Scollon and Scollon sought to sensitise us to semiotic concerns in regard to designing communication in spatial environments, architects are addressing the problem in new individually adaptable, structural concepts of how people should live together. Already in the 1960s and 1970s, “those such as Archigram and Nicholas Negroponte emphasised the potential of computer networks to promote social participation and user-configuration” (McQuire 2008b). Human action itself and the individual demands of inhabitants form parameters for the constant negotiation and re-shaping of the city. However, many of these ideas and concepts were far ahead of their time in terms of feasibility, and only in recent years have they begun to find their way into sensor-enabled cityscapes (Broeckmann 2000).

Stakeholders

A highly characteristic aspect of mediated urban environments is the multitude of people taking an interest in them. People play diverse roles and are part of the development process, as commissioners or as inhabitant-users being affected by these spaces. “In contrast to interactive spaces of the past, which were largely the product of a single designer, these places are emerging through the aggregation of many actors — investors, property owners and their architects, advertising and media companies, telecommunications service providers, urban designers, and individuals” (Townsend 2004, p.105). Due to the public and often permanent settings of such projects, the range of perspectives that need to be taken into account tends to be much broader than for the typical interactive installation for a corporation’s lobby or for an exhibition or trade show context.

To bring together diverse stakeholders and enable them to express their individual viewpoints, wishes and concerns, which will eventually be added to the whole development process, is a difficult task and by no means the usual case. As found in expert interviews (Section 2.5.5) as well as the Innsbruck case study (Section 3.5.4), planning, conception and design development often take a top-down road. A commissioning party chooses the designers, and the design concept is developed from an external, design- or technology-oriented point of view. Major restrictions in this scenario are financial and legal requirements.

However, as much of the potential of mediated architectural spaces lies in their inter-activity and involvement of human action, one of the key questions is how such spaces can actually add to the daily spatial experience of an urban community or group of individuals. A suggestion of this research is that these external stake holders should be engaged in the development process from an early stage, similar to how product or interaction design processes rely on user feedback by involving users in prototype testing.

Engagement

Research on human-computer interaction with public displays has shown that media installations create a form of social space in which people take on different roles of interaction when in its vicinity.

Behrens (2015) correlated his notion of *action space* to the phases of interaction people traverse as an audience funnel (Michelis & Müller 2011). This concept depicts transitions between phases as 1) *passing by*, 2) *viewing and reacting*, 3) *subtle interaction*, 4) *direct interaction*, 5) *multiple interaction* and 6) *follow-up action*. This concept describes a user's movement from one stage to the next as motivated by continuously increasing understanding of the situation. Wouters et al. (2016) described a similar path when relating user roles to the "honey-pot" model (Brignull & Rogers 2003). This also correlates individual engagement level with the process of moving between *passer-by*, *bystander*, *audience member*, *participant*, *actor* and, eventually, *dropout*.

While these concepts focus primarily on the individual and the stages of activity he/she is entering in a public media installation, Reeves (2011) took into account this spatial condition as a situation of being both observer and observed at the same time. He differentiated between public and private interaction and related these interactions to a "dynamism of performance": initial by-standers incrementally become a more focused audience, which potentially interacts with the installation as participants. Through passing by or becoming part of an installation, participants themselves take on a performative role. These performative effects of changing roles can entice others to abandon the perspective of being a passive audience member to immerse themselves into an active experience, "inter-acting" with the system and others and thus orchestrating the social space of the installation.

The described concepts are rooted in Human Computer Interaction (HCI) research. They look specifically at immediate levels of user engagement in public media installations or temporary setups of Media Architecture. However, they do not necessarily fo

cus on the specific accounts of Media Architecture as a permanent and potentially visually dominant element of a cityscape. Here, interest in interactive situations targeted as performances or temporary spectacles may wear off over time and they may lose their ability to engage local stakeholders.

To achieve long-term acceptance as an integral part of the urban landscape, mediated architectural spaces need to provide highly specific benefits to inhabitants and community members. Quite possibly, it is not enough to trace user behaviour to deduct certain design patterns that might suit the needs of a group. As mentioned earlier, a large part of making sense of urban space is negotiating its use and meaning by human (inter-)action. A community needs to adopt such media enabled spaces as their own.

Laurier et al. (2002) noted that neighbourhoods and communities are often constituted around highly specific and even banal activities. The range of spatial realms and digital as well as analogue media being used is broad, from shop notice boards and newsletters to face-to-face meetings and telephone calls. How digital networks can be applied to and “anchored in local tacit knowledge” (Crang et al. 2007) has yet to be determined. However, as Wellman and Hampton (2001) showed, it is essential to abolish a common conceptual understanding of communities as constructs of close, dense ties. Different media technologies offer opportunities for social bonds and action at local as well as global scales simultaneously. In his *Netville* study, Hampton found that digital networks allow for “more local weak ties, in terms of recognising, speaking to and visiting neighbours and therefore intensify the local activity among the community members”¹⁸. Similarly, the Citizen Media Project, a collaborative research project initiated at the University of Arts and Media Cologne (KHM)¹⁹ was looking at how co-creating networked applications can be used to support people in their everyday lives and how technology can encourage social change. Part of the project has been a social/mobile online platform, “*Unortkataster*”²⁰, to collaboratively identify, locate and comment on non-places²¹ in urban environments. A map of these “*Unorte*”, or non-places, allows the monitoring of developments and is moderated by a public initiative and community administration.

Could mediated architectural spaces encompass this effect and be part of a participative community development? The four groups of digital technologies relevant to urban space identified by Townsend (2004) may be helpful here although they can

18 Hampton/Wellman: *Neighboring in Netville* (2003), cited in (Crang et al 2007)

19 <http://interface.khm.de/index.php/forschungsprojekte/citizen-media/>

20 www.unortkataster.de

21 “Non-Place”, a term coined by French anthropologist Marc Augé that describes places of transience.

only serve as a categorising frame-set. Townsend grouped urban digital media into areas of “display and expression”, “communication”, “positioning” and “documentation”. Successful projects, he described, often address several of these categories. This concept of “success” in terms of architectural media space is interesting. Although the term implies a certain functionalist design mindset oriented toward problems and their solutions, Townsend’s content categories for architectural media can be thought of as rough guidelines or axes for making meaning from a spatial situation and developing relevant contextual media content. They address a media-enriched situation by recognising its physical setting from a geo-locative perspective (“positioning”) and look at the visually transformational impact (“display and expression”) of situated media. Additionally, Townsend encourages us to think about how social exchange can be facilitated (“communication”), enhancing the given spatial situation with possibilities of sharing and exchange that do not require physical presence. Finally, the documenting aspect of digital urban media adds to this notion of augmentation by expanding the temporal realm of space, for instance, by recording, annotating and accumulating past experiences of a spatial situation and thus virtually extending its physical presence.

In this sense, “success” in relation to urban digital media projects references various experiential notions of space and situated-ness. To create understanding of the meaning of experience and how experiences develop, the next section describes the term from various disciplinary perspectives. It seeks to present the range of the term’s meanings in relation to media and how aspects of individual subjectivity as well as external factors such as context, technology and interaction form experience.

2.2.4 Networking Media Space

Based on the description of media space as a concept involving the built, visual or social integration of media in a spatial environment, a fourth perspective adds to this discussion the notion of networked media and their implication on spatial perception.

Actors, Networks and Mediation

Networks are changing our perception of space. There is a significant history of propagation of the impact that digital networks and their prevalence have on geography, built environments and sociological structures of space (McLuhan, Flusser, Virilio, Castells, see Section 2.2.1).

In this respect, Castells' "space of flows" focuses on transitional processes in an increasingly networked society. Transactions and exchanges between people, communities and countries are no longer bound to specific places and instead dissolve in the flows of communication within ever growing information networks (Castells 1996). While this sociological perspective concentrates on (digital) information networks as de-centralised and the immaterial connections between individuals for communication and exchange, there are also socio-theoretical constructions combining semiotic and material mediation. Latour's Actor-Network-Theory (ANT) generally defines society as a network of heterogeneous entities (Latour 2005). The social originates in possible associations and connotations emerging from this heterogeneity. Following Latour, such a network can involve humans (actors) as well as material objects (actants) to form a socially networked communication space.

Consequently, situated media objects such as digital urban screens or Media Architectural façades are themselves not only influence the mode, complexity and content of mediated conversations but can also be seen as part of a connotational social space—a media space as a network of continuous transformations and self-renewing actions rather than a static communication system. This media space either can exist in a specific built environment, for instance, as a permanent installation promoting societal identification²². As a networked communication space, it can also take the form of a conceptual space of autonomy, where a geographically distributed community of individual groups and architectural installations represents a platform for transitional engagement and exchange in urban environments²³. With Latour, this can be considered as a rather unstable network of actants, objects and subjects, including their mediation as an entity of autonomy and agency. Media not only provide means of presentation and representation; rather more essentially, they also serve as structural elements of conversational networks in which objects (or buildings or spaces) literally communicate, negotiate and judge (Lash 1999; Foth 2008).

22 See, for an example, the "Indemann" project by GKD/ag4, Maurer United Architects. Using dynamic lighting and symbolic referencing, the observation platform managed to become the new identification object and regional landmark for a town affected by a major relocation program in Germany. <http://www.maurerunited.com>

23 See, for instance, the Connecting Cities Network: <http://connectingcities.net>

Implications for Built, Visual and Social Space

In Latour's understanding, society as a network is essentially about the production of meaning. It is not a thing and instead consists of recorded movements of semiotic actors or actants (Latour 1996, p.378). This emphasises mediation as an activity that is not bound to intermediaries but is a core characteristic of every entity in the network. Relating this principle to the architectural design process, Lorenz noted that in ANT, networks should not be seen as loosely linked entities but as *worknets*: "what is important is not what is actually linked, but what is 'at work' within an assembly" (Lorenz 2011, p.15). Each state of the spatial formation process becomes a design task in itself, involving a process of mediation. In this regard, designed artefacts such as building models or architectural renderings are tools for negotiation resulting in spatial transformation. Rather than focusing solely on the built or visual form, such a perspective on networked activity and mediation is more interested in the actual effect of design processes in a spatial environment: "If the realisation of a project is defined by its consequences, its lasting effects on relevant stakeholders and on the next phase of the overall project, each step of the design process stops being hypothetical" (Lorenz 2011, p.13). In a mediating (ANT) network, the presentation of design artefacts already has an influence on its spatial context. It becomes a reality, whether through actual construction activities or by changing the cultural atmosphere among stakeholders or even specific policies. Design stages become projects (actants) in their own right, triggering the emergence of further projects and thus the dynamics of the network.

On a separate level, the potential of spatial design as a mediating activity unfolds when the virtual and the real merge. Media spaces such as temporary exhibitions or public media installations often live between the ephemeral and the permanent. Such environments are often perceived as transitional spaces of limited duration and thus somehow represent a neutral ground for discussion between different stakeholders while being public at the same time. They provide temporary forums for mediating design intentions and encouraging new and unexpected connotations, perspectives or alliances. In this respect, temporary media spaces integrating means of virtual or digital communication can be used to generate new momentum for larger, ongoing processes to activate built or social environments. The aspect of social activation and platforms for common experience in spatial environments is further elaborated in Section 2.4, which discusses Media Architecture as a "shared experience".

The theoretical investigations into media space as a conceptual entity of built, visual, social and networking space underline the wider potential of Media Architecture as a manifestation of individual experiences. The following section is specifically investigating the experiential interrelations between humans and the digital and physical objects represented in Media Architecture.

2.3 Media Experience

Experience is a broad term, covering aspects of perception, cognition, emotion and aesthetics. In the context of this research study, several dimensions of experience design are examined in relation to mediated and interactive architectural environments. Experience design encompasses an understanding of users and context as well as dimensions of the designed artefact (i.e., a sense of appropriate technologies and relevant content/subjects that users will be able to relate to and an understanding of suitable visual qualities and aesthetics). Experiences are essentially subjective, just as the aesthetic qualities of a designed product or service are subjective. Although the actual experience as an individual phenomenon cannot be designed, there can be a “design for experience” (Sanders 2001; Petersen 2011). There have been a number of theoretical approaches to understanding experiences from diverse disciplines, coming from social sciences and humanities but also business-related disciplines. Battarbee and Forlizzi (2004) grouped these approaches into three main categories based on their individual focus/perspective on experience: product-centred, user-centred and interaction-centred approaches.

Product-centred approaches are practical resources for both designers and non-designers and often serve as guidelines for the creation and evaluation of artefacts, services or environments evoking compelling experiences. Often, they encompass lists of criteria a product should meet when designed for experience. As an example, Jääskö and Mattelmäki (2003) developed design principles for understanding individual experiences and applied them for user-centred product concept development.

User-centred approaches to experience focus on an understanding of the future users of a product or service. Drawing from, for example, ethnographic research or psychology, they provide tools to understand people’s actions and motivations and the experiential qualities relevant to when using a product. Examples of such approaches focus on behaviour related to actual tasks as well as the emotional qualities of behaviour (Hassenzahl 2003). Relatively early, Hudspith (1997) described a framework for a holistic understanding of functional and experiential aspects of products, including utility, ceremony and appeal. Suri (2003) used design itself as a means of understanding user actions and motivations within specific contexts.

Interaction-centred approaches tend to focus on the interactive relation between individual and product. Conceptual models in this area often build on the work of pragmatist philosopher John Dewey and essentially present experience as a “totality, engaging self in relationship with object in a situation” (Battarbee & Forlizzi 2004,

p.262). This approach focuses not only on the product and its user but also the contextual surroundings and circumstances in which the interaction between both is taking place. Following John Dewey's "Art as Experience" (Dewey 1980), (Wright et al. 2003) defined experience as developing from compositional, sensory, emotional and spatio-temporal "threads" that contribute to the creation of meaning from an experience. Others have described experiences as human interaction with designed products in four usage dimensions, namely categorising, inventive, aesthetic and social (Margolin 1997).

2.3.1 Understanding Users

User-centred design focuses on an understanding of the future users of a product or service. Drawing from fields such as ethnographic research or psychology, they provide tools to understand people's actions, motivations and the experiential qualities relevant when they use a product. Such approaches focus on behaviour related to actual tasks as well as emotional qualities of behaviour.

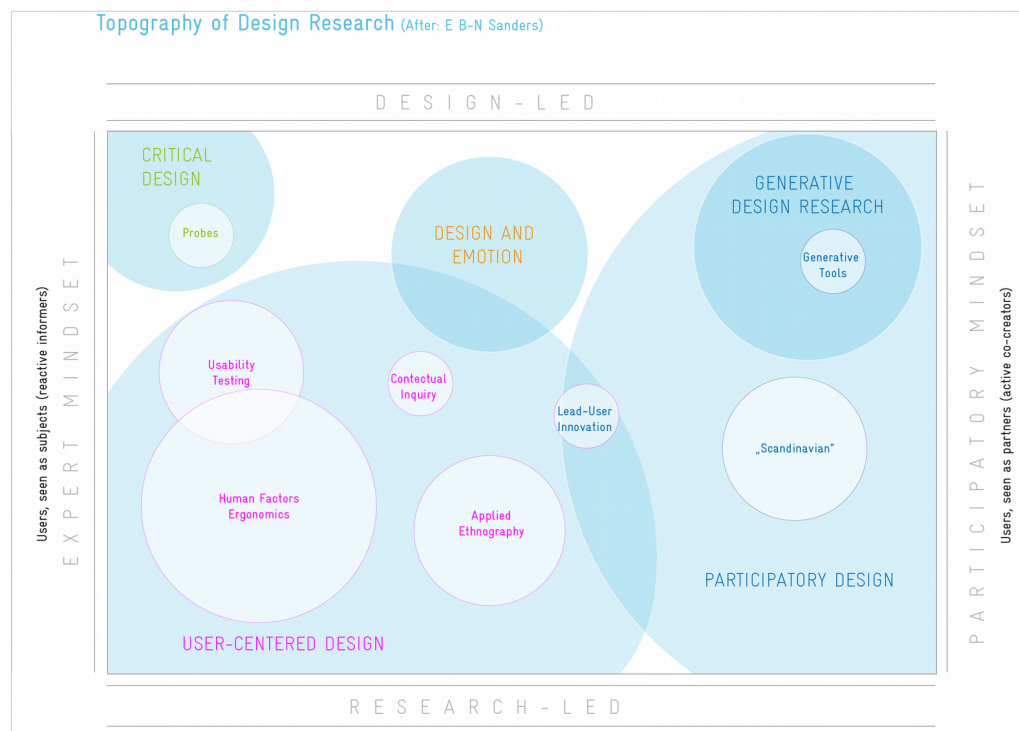


Illustration 2.1: Topography of Design Research. After: Sanders (2006).

In 2006, Elizabeth B.N. Sanders looked at emerging trends in design research and proposed a “cognitive collage” of practice-informed research approaches (Sanders 2006). The map is useful in identifying the diverse foci of various design processes, addressing or even including the users of the designed “product”.

Within Sanders’ topography, three distinct zones can be distinguished, the largest being user-centred design and participatory design, accompanied by critical design with a focus on dialogue and experiential innovation. User-centred design is research-dominated and defines people and their needs as the objects of study. The three main areas within user-centred design are primarily drawn from applied social sciences, behavioural sciences and engineering. Sanders described them as follows:

- “Human factors/ergonomics — the study of how humans behave physically and psychologically in relation to particular environments, products or services (borrowing from physiology, psychology and engineering)”
- “Applied ethnography — the qualitative description of cultures and cultural practices, which is based on observational research (and borrows from anthropology)”
- Usability testing — the measurement of “how well people can use something for its intended purpose (which borrows from cognitive psychology and cognitive engineering)” (Sanders 2006, p.5).

Sanders noted that most practitioners and educators in the field of user-centred design are researchers, not designers. The origins of considering user feedback about tasks and technological experience are found in HCI and Computer-Supported Cooperative Work, especially from the late 1960s to 1980s. Since then, the nomenclature has shifted from user-centred design toward interaction design or user experience design. This reflects a broadening of focus, from understanding the use of computers and technical products in the context of work-related tasks and efficiency, to an understanding of lived experience and interpretation of contexts. This shift led Hudspith to first describe a framework for a holistic understanding of functional and experiential aspects of products, including attributes of utility, ceremony and appeal (Hudspith 1997). Sanders’ map indicates various approaches within user-centred design that account for a more substantial understanding of users’ circumstances and describes, for instance, contextual inquiry (Beyer & Holtzblatt 1997) as a sub-category of user-centred design. Originally coming from software development, one-on-one discussions are applied to discover daily routines and processes and identify the potentials for a software redesign. Additionally, lead-user innovation (Hippel 1994) (Hip-

pel 2006) is indicated as a research perspective striving for innovations developed by consumers and users rather than manufacturers. As it focuses on selected users taking part in the initial innovation process, these “experts” are able to give distinct and refined input of overall user experience to the design/research team. Buchenau and Fulton Suri proposed the use of design itself as a means of understanding user actions and motivations within specific contexts (Buchenau & Suri 2000).

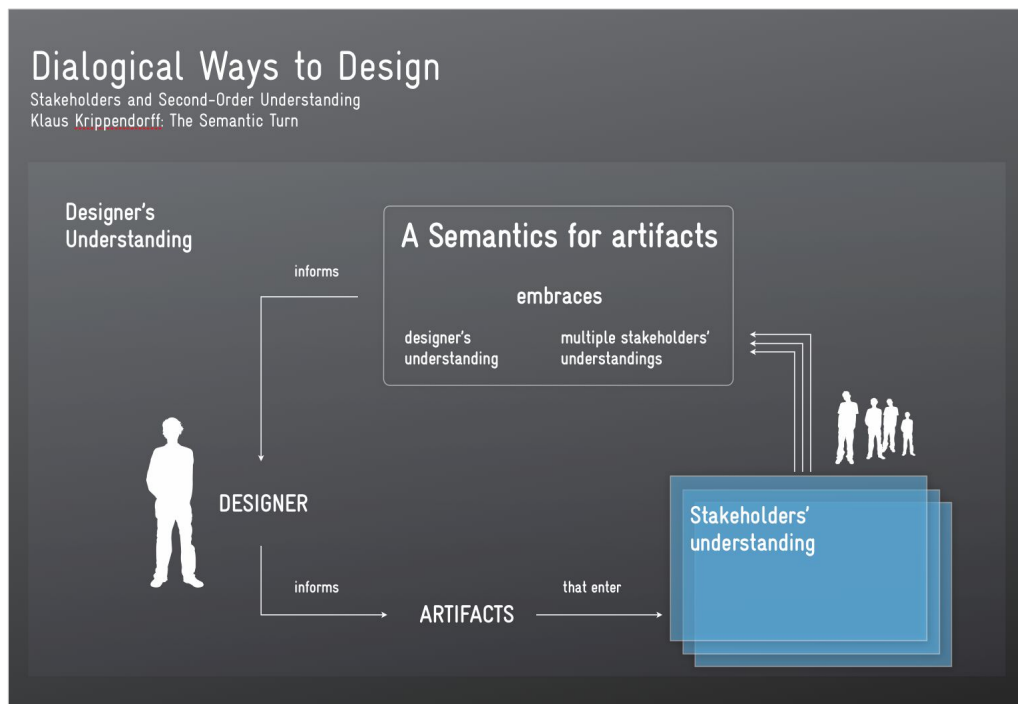


Illustration 2.2: Dialogical Ways to Design. After: Krippendorff (2005).

The above-mentioned strands of user-centred design show a change of perspective toward an understanding of the user’s context and subjective experiences as driving elements. In this respect, Krippendorff’s relationship between context, meaning and stakeholders (Krippendorff 2006) is a helpful concept. He rejects the idea of the average user or “end-user” in favour of a “network of stakeholders”, taking interest in the design problem from various perspectives. Elaborating on Simon’s *The Sciences of the Artificial*, he generally sees a “shift in the conception of design from a technical or rational problem-solving activity (...) to a process that relies on stakeholders with different and potentially conflicting interests” (ibid., p65). Krippendorff emphasised a human-centred understanding of designed artefacts and a recognition and exchange of their multiple meanings in individual contexts. These multiple perspectives need to be recognised and exchanged in some form of dialogue. For him, being in dialogue means a suspension of judgement²⁴ and of claims of being right or superior to other participants in the service of listening to what is said, acknowledging each other’s

24 Citing (Bohm, 1996, 26)

contributions and building on these. For Krippendorff, dialogue is an inherently creative co-process that is neither attributable to any one individual nor exclusive of any one participant. It could be regarded as a model of participatory design.

This dialogical concept for design is supported by pragmatist approaches to aesthetic experiences. Bakhtin Bakhtin (1990), for example, noted that in a “dialogical world view, understanding or making sense of an experience occurs in the tension between self and other” (McCarthy & Wright 2004, p.73). Bakhtin explained that an aesthetic experience is essentially developed through relational activity between the self and others, making the object or artefact actively “whole”. Understanding design as dialogue thus means understanding the world and its components as un-finalised, as half-designed, as a world that is always “becoming” (McCarthy & Wright 2004, p.193).

In Sander’s topography of design research, several areas support this notion of human-centred, contextual or dialogical design. These are further discussed in Section 2.3.3.

2.3.2 Understanding Interaction

The dialogical aspect of designing experiences mentioned above is built on constant action and interaction between the involved parties and “stakeholders”. Interactive technologies can help create a successfully designed experience. As Ben Shneiderman noted, technology is able to veritably enrich experiences when it supports or provides alternative ways of undertaking activities that people already love anyway, such as communicating with each other (McCarthy & Wright 2004, p.4).

O. D. Wensveen et al. (1999) identified three types of human skills that must be addressed when designing a product or service for a rich, interactive experience, namely perceptual-motor, emotional skills and cognitive skills. Frens (2007) noted, however, that interactive digital interfaces often emphasise cognitive skills while lacking characteristics addressing sensual perception and emotional appeal. He argued that the common separation of form and interaction in the design process of interactive products may be a reason for this. In recent years, with the success of product development taking an integrated and service-oriented approach to hard- and software design²⁵, a continuous change can be observed, with a move toward a design

²⁵ This was developed with masterfulness by Apple’s product philosophy. On the design of the iPod, Steve Jobs mentioned in *Newsweek* (2006-10-14): “We had the hardware expertise, the industrial design expertise and the software expertise, including iTunes. One of the biggest insights we have was that we decided not to try to manage your music library on the iPod, but to manage it in iTunes. Other companies tried to do everything on the device itself and made it so complicated that it was useless.” Source: https://en.wikiquote.org/wiki/Steve_Jobs

understanding that considers the design of interaction as an overarching process of shaping form, content and action. Examples of this shift in interaction design practice have been documented by Moggridge (2006) and can be found in recent work by studios that include *IDEO*, *Designaffairs* and *Intuity Media Lab*²⁶. Extending this argument from products to digital environments, McCullough (2004, p.158) wrote that the more “that factors external to computers per se become a design consideration, the more the design focus shifts from things to experiences. The physical and social contexts extend the interpretation of the information context. Organisational, social and physical factors play a greater role in usability”. For him, this reflects a paradigmatic change in interaction design, emphasising experiential satisfaction rather than operational tasks. When the design of interactive experiences allows even unforeseen activities, “this latest stage in the trajectory of HCI has high potential for cultural expression” (McCullough 2004, p.162).

Elaborating on this, Battarbee and Forlizzi built on an interaction-centred framework of experience, focusing on interactions between individuals and products, but also the circumstances in which these interactions are happening (Battarbee & Forlizzi 2004). They mapped the relationship of interactions and user experience, identifying three different types of user-product interactions and three dimensions of experience these yield. The interactions range from *fluent interactions*, meaning forms of automatic or sub-conscious actions, to *cognitive product-user interactions*, for instance, when dealing with unfamiliar objects, functions or services that call for attention. Finally, *expressive user-product interactions* form a relationship between user and product through change or modification, for example, in customising or personalising actions. According to Battarbee and Forlizzi, these interactions are basically able to yield three types of experiences, categorised as “experience”, “an experience” and “co-experience”. While experience describes the “constant stream of self-talk” (Battarbee & Forlizzi 2004, p.263) (i.e., the continuous assessment of current tasks and goals in relation to our social or spatial context), “an experience” (Dewey 1980) is a more defined constellation of a series of actions and emotional impressions, which stick in one’s mind as an overall experience/sensation with a defined beginning and end. Co-experience, as the third category, defines experiences that are created and shared in a social context with others, allowing diverse interpretations of the individual experience by other users. Some of today’s favourite social media sites (e.g. *Facebook* or *Twitter*) are based on the concept of co-experience and sharing individual experiences. In a typical user-product interaction, the individual’s experiences dynamically result from the continuously interchanging cognitive and expressive in-

26 Interaction design studios with a strong orientation toward experiential product design and technology include IDEO (www.ideo.com), Designaffairs (www.designaffairs.com) and Intuity Media Lab (www.intuity.de).

teractions as they happen. When these experiences are exposed to a social interpretation processes and given shared attention, the feedback from others can influence or change the original meaning of this experience in a dynamic process.

The concept of co-experience demonstrates how individual experiences and their interpretations are influenced by social context, which means the presence of others, whether virtual or physical. McCarthy and Wright also proposed that “social-practice accounts” of interactive technologies are essential for an understanding of experience and that individual emotional states cannot be separated from the situation (McCarthy & Wright 2004, p.14). For Shneiderman, technology only provides enriching experiences when it brings about alternative ways of performing activities that people love: communication and exchange. He explained the success of web communities and messaging services by their support of a basic human need: establishing and maintaining social relations. This is a major requirement to create technical applications of experiential quality and relevance to users (Shneiderman 2002).

Dourish looked at this account of social influence and took it to a physical and spatial dimension. Investigating the phenomena of embodiment, he highlighted their particular and concrete nature as happening in real space and time, thus becoming participative elements as “objects of experience” (Dourish 2004). When describing the experience of using media technology within the context of the 21st-century urban environment, McQuire noted that public space currently “undergoes profound changes, as the immediacy of various forms of action-at-a-distance dislodge the social primacy of embodied presence” (McQuire 2008b, p.10). For him, the new possibilities of urban computing at the intersection of modern media and modern urbanism transform traditional notions of place and experience, familiar and foreign, self and stranger. Social interactions are distributed across heterogeneous space-time frames. At the same time, digital interactive media have become integral to social dynamics. McQuire argued that the spatial experience of modern social life is developed and constitutes itself in an amalgam of urban territories, social practices and media feedback. When talking about architecture in relation to participation (see Section 2.4), Blundell went as far as asserting that interactive social practices themselves have the potential to make space. He stated that “participation is also ‘creating space’ by creating space for discussion”, essentially liberating speech (Blundell Jones 2005). Could Media Architecture provide particular enunciative and spatial interfaces to encourage free speech and ongoing participation in community concerns?

2.3.3 Understanding the Context

In Dewey's view, an experience is constituted primarily by the relationship between the self and the object in a certain situation. Just as the interaction between user and object or the dialogue between diverse users is important to an experience, its contextual surroundings and circumstances are equally important. These circumstances can encompass compositional, sensory, emotional and spatio-temporal aspects (McCarthy & Wright 2004, p.79). This means they can be highly unspecific, and it can be analytically difficult to trace the way they influence a subjective experience. Since the late 1960s and 1970s, design practice, especially in Scandinavian countries, has been active in developing methods to gain insight into individual notions of context and its influence on the subjective perception and interpretation of designed artefacts.

Sanders' topology of design research again provides an initial overview of the relevant conceptual mindsets and the methodical approaches at hand. Traditional user-centred or human-centred approaches to design research often take an observational or interrogational standpoint. They focus on explicit actions and needs that are either being articulated by the users or could be observed and measured by a research team. In terms of the way we understand experience, it is argued here that they are only able to provide a limited account of an individual's interpretation of a given designed object or situation (Sanders 2008).

In contrast to these research-oriented and user-centred approaches, participatory design research embraces an inclusive understanding of the research and design process. It does not separate knowing and understanding from design and making and instead actively involves future users in the ideation and creation process to help ensure that the designed product or service meets their needs and expectations. Sanders calls the participatory mindset the "Scandinavian way of thinking". It can be traced back to activities with trade unions in Scandinavia during the 1960s and 1970s that dealt with issues of workplace democracy and changes in working conditions due to increasing computerisation (Dourish 2006). Participatory design research is a dialogical approach based on active exchange with others. It aims at an interrogation of a specific situation from diverse perspectives to open it up for new meanings and possibilities (Blundell Jones 2005).

Recent approaches to participatory design have looked at the specific demands for such a dialogue and the tools available for an exchange between designers and "laymen", or future users. Sanders, for example, proposed generative design research

tools (Sanders 2000; Sleeswijk Visser et al. 2005). The term *generative tools* refers to the definition of a shared common design language used by designers/researchers and stakeholders for direct visual communication with each other. “Generative” is applicable since through this language, participants are enabled to express an infinite number of ideas related to their personal dreams and insights through limited or given sets of stimuli. In this sense, generative tools help those who will later be affected by design decisions to communicate subjective views, ideas and dreams in a designerly way. The main intention, however, is to provide ways to identify how things could be, rather than how they should be. For the professional designer, it can be inspiring to develop tools people can use to express their own ideas, as this requires a certain degree of empathy for “users”. It is also a highly informative approach, leading to results.

Typical to participatory approaches is their focus on the process of ideation and a climate of open discussion. As Blundell noted, a “participative approach should not seek total efficacy but remain open to unexpected conclusions” (Blundell Jones 2005, p.50). This is also true for critical design research tools. Critical design, in contrast to an “affirmative”, problem-solving design process, is concerned with questioning the status quo and thus “provides a critique of the prevailing situation through designs that embody alternative social, cultural, technical or economic values” (Dunne & Raby 2001, p.58). It is an inspirational tool, making people think through carefully crafted questions. Cultural probes are a main research tool of critical design research (Gaver et al. 1999). The probes usually include well-designed packages of artefacts and tasks featuring “evocative images” and “oblique wording”. The intention is that test persons immerse themselves in interpreting the meaning of the probes and completing them on their own. Probes are designed to elicit emotional responses from stakeholders. They are first and foremost an inspirational tool for professional design teams, providing interpretable source material to feed the design process. In this sense, they are not inclusive research methods, unlike participatory approaches.

When looking at ethnographical implications for design, Dourish labelled ethnographic design methods such as probes a form of “discount ethnography”, which is often understood as a time-saving alternative to ethnographic field research but is essentially missing a coupling of analytical and methodical concerns (Dourish 2006). Gaver et al. emphasised that cultural probes are NOT intended to provide a better understanding of the circumstances of the end-user or to empathise with them. However, these probes indicate a direction for a valid methodical approach to a contextual understanding of individual experiences that has been developed further in the field. As Sanders noted, Tuuli Mattelmäki and Katja Battarbee (Mattelmäki & Battarbee

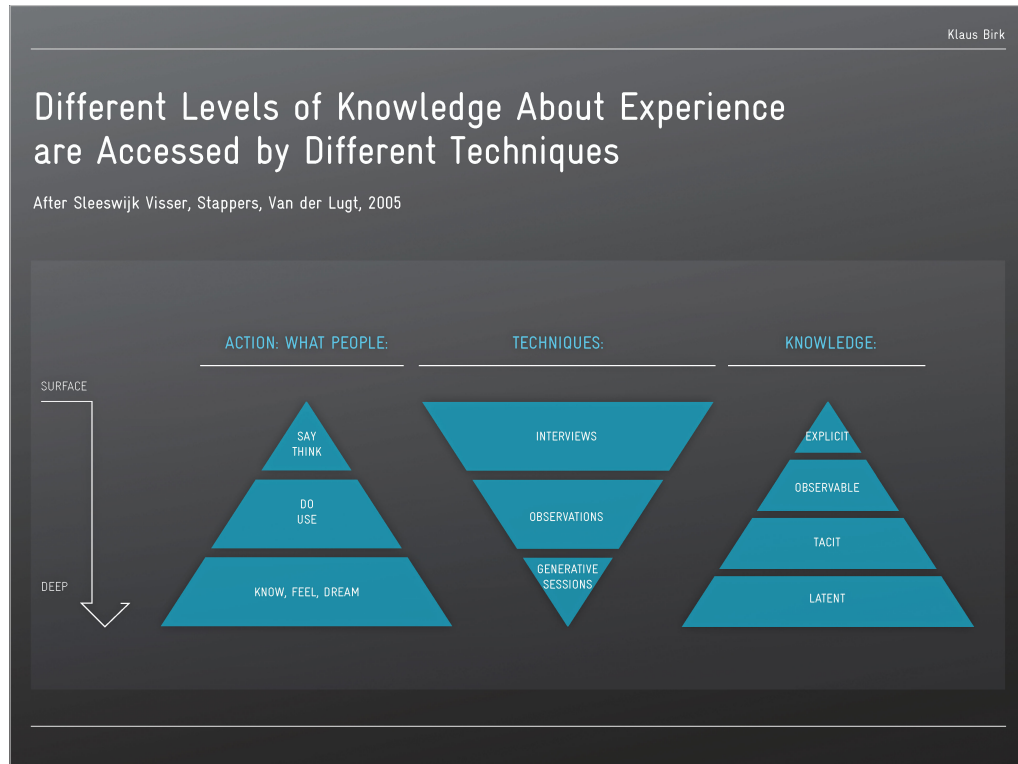


Illustration 2.3: Techniques for capturing knowledge about experience. After: Visser et al. 2005

2002), for example, “are exploring the creation and use of ‘empathy probes’, which are similar to, yet evolved from, cultural probes” (Sanders 2005). Empathy probes let the researcher gain contextual insight, enriched by empathic information about the test person. Empathy probes therefore represent both informational and inspirational tools for designers. Pieter Stappers and his colleagues at TU Delft are exploring varieties of “sketch tools” and “inspiration interfaces” for designers, such as the video collage, to evoke a sense of “presence” in an inspiring design environment (Stappers 2005).

When looking at the given examples of design research tools in the fields of participatory/generative and critical design, the basic difference can be observed that lies in the diverging intentions of their application. Participatory approaches are defined by an inclusive process of seeing designers and stakeholders as partners with equally important expertise, with the aim of gaining in-depth, first-hand information and tacit knowledge (Polanyi 1974) about a specific design context. Critical design research takes a different path; it clearly distinguishes the ideation and design process from stakeholders’ input. The feedback gained from methods such as cultural probes serves primarily as a source of inspiration, not as a valid argument directly informing the design process itself (Sleeswijk Visser et al. 2005).

However, both approaches have in common a certain openness toward the expected outcome of the process. When looking at participatory approaches to experience design for architectural media applications, Dalsgaard and Halskov emphasised that the concept of intention and value should, however, remain at the core of the project despite the typical orientation of participatory approaches toward open and unexpected conclusions. From their practice-oriented perspective, they even suggested a predefined and communicated intention for designed systems to be mandatory (Dalsgaard & Halskov 2006).

2.3.4 Developing a shared understanding

“What is interesting is always interconnection, not the primacy of this over that”.
Michel Foucault, in: (Brooker 2003)

As can be seen from the described perspectives on the subject of experience, designing for involvement in experiences is a complex task that requires knowledge from diverse areas of research and practice to be fed into the design and development process. Today, in corporate experience from major brands, the audience or users are addressed on different levels and scales of designed experiences, from the product itself to visual and symbolic representations, interior spaces, architectural situations, urban scale and virtual appearance. Alain Findeli noted that “all these levels, however technically different they might be, need to work together to achieve a holistic gestalt that coins the user’s experience with the corporation/firm/brand” (Findeli et al. 2008). The emphasis here lies on the intentional interplay between the designed artefacts in order to achieve an extension of user experiences from objects to larger “brand ecologies”. The typical distinction that is frequently made between design professions, often based on the type of their end-products, is becoming remarkably less important, at least during the conceptual and explorative stage.

Initial diagnostic research on Media Architecture suggests that the design for mediated environments is an endeavour undertaken by several complementary professions and multidisciplinary teams. Interviews with studios in the field made it clear that these teams often work together very closely, bringing together architects, graphic designers and 3D and software artists²⁷. However, it is equally important to consider additional stakeholders such as commissioners, administrators and the public, who are not directly involved in the creative process in most cases, for the project to succeed. Consequently, there are different models of collaboration and exchange, depending on the understanding of the role that each team member, group or stake-

27 For example, Interview with Dieter Brell, 3deluxe, 05/2010. See Appendix 7.4.4

holder plays during the process. These models represent the underlying mindsets of design as a participatory process and design as a distinctive process of experts and external “informants”.

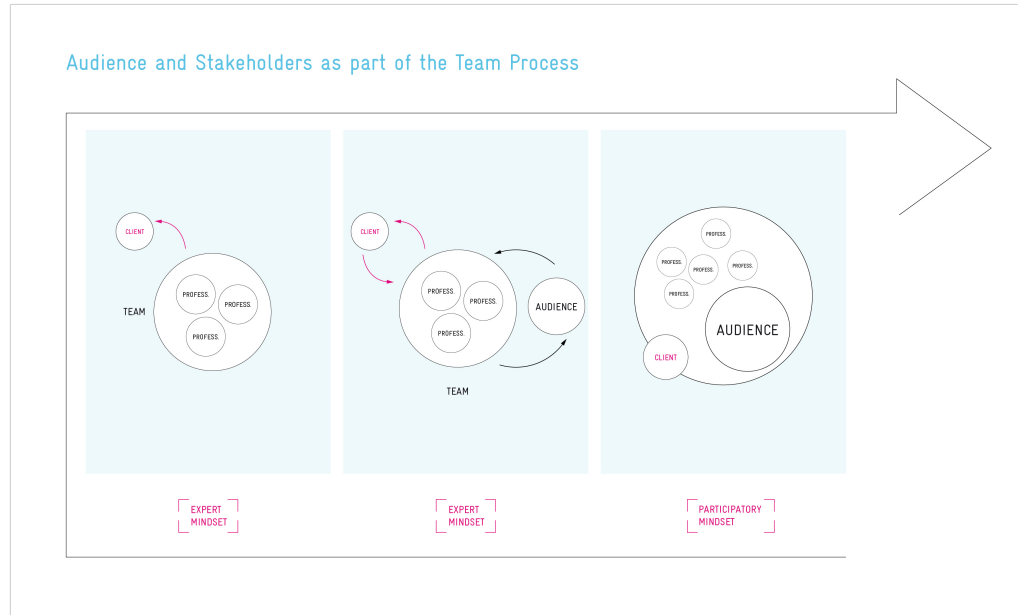


Illustration 2.4: Different types of stakeholder involvement

Essentially, these models are elementary representations of dialogue and exchange between each group of stakeholders. Due to the different backgrounds of individual parties or team members, it is crucial to develop a shared *common language* that allows continuous and immediate exchange and feedback.

Chazar (2006), for example, looked at the changing demands for collaboration between architects and engineers in digital architecture. Although he mainly discussed the communicative advantages of computing in collaborative design, his findings can be interpreted on a more general level. For example, he found that successful communication is given in a collaborative environment under three preconditions: Firstly, there needs to be a general willingness to engage with the views of other team members. Secondly, results of iterative steps need to be readily digestible by other members of the team to keep up a momentum and continuity in the design process. Thirdly, *input* and *output* formats need to be compatible.

Similarly, in their review of multidisciplinary teamwork in health care, Wilson and Pirie identified a generally cooperative attitude as essential. This involves appreciating others' strengths and weaknesses in open communication and recognising that “individual professions may not hold a monopoly of the knowledge base to deal effectively with the user-group” (Wilson & Pirie 2000, p.23). As a major encouraging element

of teamwork, they highlighted the existence of a common vision, shared by all team members and thus generating increased confidence and aspiration to learn. Additionally, they indicated clear communication of individual roles within the team as well as dynamic and adaptable organisational structures (e.g., team-rotation, ad-hoc meetings) as positive influences on teamwork processes.

In their use of a common “designerly language” as a tool for inspiration and exchange, Sleeswijk Visser et al.’s context mapping approach can be seen as an example of establishing shared knowledge and insight across groups of professionals and non-professional stakeholders (Sleeswijk Visser et al. 2005). Visual and haptic modular artefacts can be used in several stages of a generative design research process to help participants engage with thematic subjects as well as with others in collaboration and discussion. During the contextual mapping process, the roles of the stakeholders of the process intertwine and overlap. This occurs, for instance, when designers take an active part in preparing research material (sensitising packages) and generative tools/exercises and when members of the audience remain motivated and involved, exceeding the initial sensitisations and generative sessions.

This proposal of creating contextual awareness across possibly divergent groups of stakeholders and team members through a set of modular, designerly tools is argued to represent an essential precondition for developing a shared understanding in an experience design process. As a mode of practice, its application to a design process of mediated architectural spaces may also provide new opportunities for research and contextualisation.

2.4 Media Architecture as Shared Experience

An experiential perspective on design always seeks to include the individual as well as a broad spectrum of contextual strands and (inter-)activities in the process of developing a product, service or situation. It has even been argued that creating and adding to the process itself determines the actual experience to a larger part (Buchenau & Suri 2000). The following sections discuss implications for the process of designing architectural media of the above-mentioned understandings of experience. They form a basis for the identification of a methodical framework for creating sustainable media experiences in built environments, thus allowing “real life experiences with experience design” (Dalsgaard & Halskov 2006).

2.4.1 Adaptive, Informative and Engaging Environments

The previous sections and their emphasis on products and interaction-related sources suggest that an experiential approach to architectural media is a matter of emulation or adaptation. It is actually not so much a question of what architecture could learn from other disciplines, such as ethnographic research or user experience design, but what architecture should remember from its own past.

Already in the 1960s and 1970s, architectural tendencies were oriented toward the conceptual development of digitally enhanced, spatial experience and interaction in the built environment. For instance, Archigram and Nicholas Negroponte emphasised the potential in the rise of computer networks to promote social participation and user configuration (McQuire 2008b, p.89). In “Plug-In Cities”, Archigram proclaimed the possibility of a direct interactive manipulation of the individual environment, which “needs no longer be left in the hands of the designer of the building: it can be turned over to you yourself. You turn the switches and choose the conditions to sustain you at that point in time. The building is reduced to the role of carcass - or less” (reprinted in Cook 1999, p.68). The main problem of many of the conceptual ideas was not so much their utopian and optimistic attitude toward technical viability, but an underlying tendency to base questions of power and user agency entirely on individual choice. This focus on the individual neglects the fact that in a shared urban space, a collective negotiation of social interactions needs to take place (McQuire 2008b, p.104). However, building on our understanding of human experience, these social interactions are an important element of making individual sense of a situation. In fact,

these interactions are a major driving force for changing human needs in regard to buildings and spatial situations. For example, the potential of responsive architecture to adapt to occupants' expectations has also been explored by Bernard Rudofsky and Stewart Brand (Rudofsky 1965; Brand 1995). Looking at Media Architecture from this perspective, it can be translated as an evolutionary next stage only in the aspirations of adaptive architectural expression. Conversely, it becomes clear that adaptation and responsiveness as elements of individual expectations need to be addressed when developing and designing for experience in mediated architectural contexts.

In "Placing Words: Symbols, Space and the City", Mitchell noted that one of the roles of architecture is "to create a rich environment for symbol, language and discourse grounding, and act as the 'glue' of communication that holds communities together" (Mitchell 2005, p.p12). Tying this in with what we have seen from Venturi and Scott Brown (2004) as well as Scollon and Scollon (2003), there is grand potential for Media Architecture to play on this analogy of adding to the glue of visual language of a cityscape and being able to re-interpret it. As an urban digital medium, it provides several options for visual integration, from creating situations of display and expression to location-based communication, positioning and visual documentation (Townsend 2004).

At the same time, architectural media do not serve merely representational purposes but rather add to the constitution of the city-dweller's experience of the city. As mediated spaces embedded into the urban fabric, they are part of his/her sequential experience of an urban environment. Mitchell used the analogy of "a film with jump cuts or flashbacks", set together as "a sequence of spatially and temporally discontinuous scenes" (Mitchell 2005) as either expressions of the local built reality or ephemeral media constructions. In such a mediated environment, spatially related as well as displaced information can create an "overlay of anticipation and retrospection on the direct experience of places".

2.4.2 Mediated Architectural Design as Capacity Building

Section 2.2.3 discussed how community engagement is an elementary part of an understanding of social space within the city. The democratic principles underlying social media and the spatial contextualisation of data disseminating through these networks help citizens understand and actively engage with their immediate as well as not-so-immediate environment.

Taken to the professional level, traditional disciplinary boundaries and fields of scope become increasingly blurred. The democratisation of information and the participatory and collaborative nature of large parts of our digital culture also change the traditional roles of architects, relieving them of their roles as creative and exclusive idea-providers. In the 1970s, Alexander advised architects “to consider new projects in global, everyday and political context, emphasising their obligation to shape society in a responsible manner” (Alexander 1978).

In contemporary digital architecture, Lars Spuybroek has rethought relations of flow and structure in the contemporary city. His concept of “wet grid” and “dry grid” architecture essentially argues that the form of preconception applied in geometric, modernist, “open” architecture is unsuitable to the complex interactions in urban spaces. Instead, he proclaimed a turn to an architecture of “vagueness” (Spuybroek 2004). However, the nature of today’s digital infrastructures in the city is oriented more toward transparency and immediacy. In this sense, it creates not a social space of vagueness but one of customisation and modification (something Spuybroek actually associates with modernist architecture). However, this “wet grid” principle provides a variety of options to facilitate “spaces and platforms for unplanned, contingent and unpredictable social alignments and interventions” (McQuire 2008b, p.108).

This is interesting in light of Augé’s notion of “non-places” (Augé 1995) in urban environments. The lack of significance these non-places hold for city dwellers has been attributed to “conspicuous design agency” (Design 21 2006): master planning, control, regulation and networks of professionals are seen as major sources of discontent and abandonment of urban space. Instead, the researchers suggest an inclusive process, recognising people’s capacity to participate in planning, designing and maintaining their surroundings.

Following such a path, mediated architectural design could become a medium for knowledge transfer, not only in the sense of professionally designed outcomes designed as communication tools FOR people, but also as an element of instant urban intervention WITH people, enabling communities to build capacity to change their immediate urban environments by the use of mediated architectural tools and strategies.

2.4.3 Desire and Participation

The above-mentioned descriptions of architecture as an inclusive process obviously build on the participation of others—of externals and non-professionals. But how can these groups be involved in the process of designing for Media Architecture? Do they want to be involved at all? Do they, after all, actually want a mediated environment?

In their seminal book on architecture and participation, Blundell Jones et al. dedicated a chapter to the role of desire in participatory processes and how it can be applied to promote inclusivity in design (Blundell Jones 2005). They argue that desire is essentially connected to the past experiences of people and is an expression of their dreams and aspirations for the future (Sanders 2001). Desire itself is processual—it continues to change and evolve with one's experiences and achievements. Essentially, desires are projections into future states and situations and can be seen as a motor for creativity and creative engagement. Landau's definition of desire as a bricolage, continuously "transvaluating" in collaging "one's collage onto another collage", suggests that desire is something that evolves from a collective process, something that can only develop in exchange with others.

Following this reasoning, the desire for a participatory project and the adoption of such a project as creative potential actually comes through the act of taking part – through the participatory interrogation of a specific situation from diverse perspectives in order to open it up for new meanings and possibilities. In the sense of "desire", the ideation and creation process, the bricolage, is the most important element of participatory design, even more important than the constructed results, as these are transitional in a process driven by desire²⁸.

For Blundell Jones, a participative approach should thus not seek total efficacy but remain open to unexpected conclusions. However, the authors state that existing consultation procedures in architectural practice and urban planning tend to be too directive and focused on certain expected outcomes, "introducing preformed tools and assessment forms, which rather than liberating, tend to control the participative process" (Blundell Jones 2005, p.50). Especially in formally applied participatory programs in urban planning, experts, the state and administrative officials are essentially the main characters driving the process; residents, the actual participants, are often consulted only in carefully prepared documentations. In this sense, the authors distin

28 See also 'Desire', an article submitted by John Landau on 24 October 1997 as a contribution to *deleuzequattarianary*. <http://cs.art.rmit.edu.au/deleuzequattarianary>

guish between organised participation (i.e., participation processes that are implemented on a performed or hierarchical level) and transversal participation (i.e., a form of participation that evolves along the process of design discussion, allowing for unexpected conclusions).

An interesting concept that also finds application in several Media Architecture projects is the idea of the architect or designer as an “urban curator” (e.g., LAb[au]’s work for the Dexia Tower in Brussels²⁹). Rather than being a singular form-giving spirit, developing (master)plans and pre-conceived models, the urban curator acts as a mediator. Petrescu suggested that the role of the architect or design professional in this sense is one of a care-taker and “a connector of people, things, desires, stories, opportunities” (Blundell Jones 2005, p.57). Thus, the professional serves as a hinge between standard planning procedures and the interests of the community.



Illustration 2.5: Touch - interactive urban installation by LAb[au] at Dexia Tower, Brussels, 2006. Part of a series of curated art projects using the tower's LED media façade. Photography © LAb[au].

²⁹ LAb[au] is developing and curating several installations for the Dexia Tower in Brussels, among them: “Weather-Tower” (2008), “Chrono-Tower” (2007) and “Touch” (2006). <http://lab-au.com/>

The ideas of desire and participation described above are valuable in the design process for mediated architectural spaces as they allow participants (or communities or stakeholders) a procedural and emotional identification with a project. In developing a shared understanding, the process of creating desire through participation can generate a long-term community engagement with the project and thus an important contribution to a sustainable integration of mediated architectural installations in public space.³⁰

2.4.4 Analysing Experience

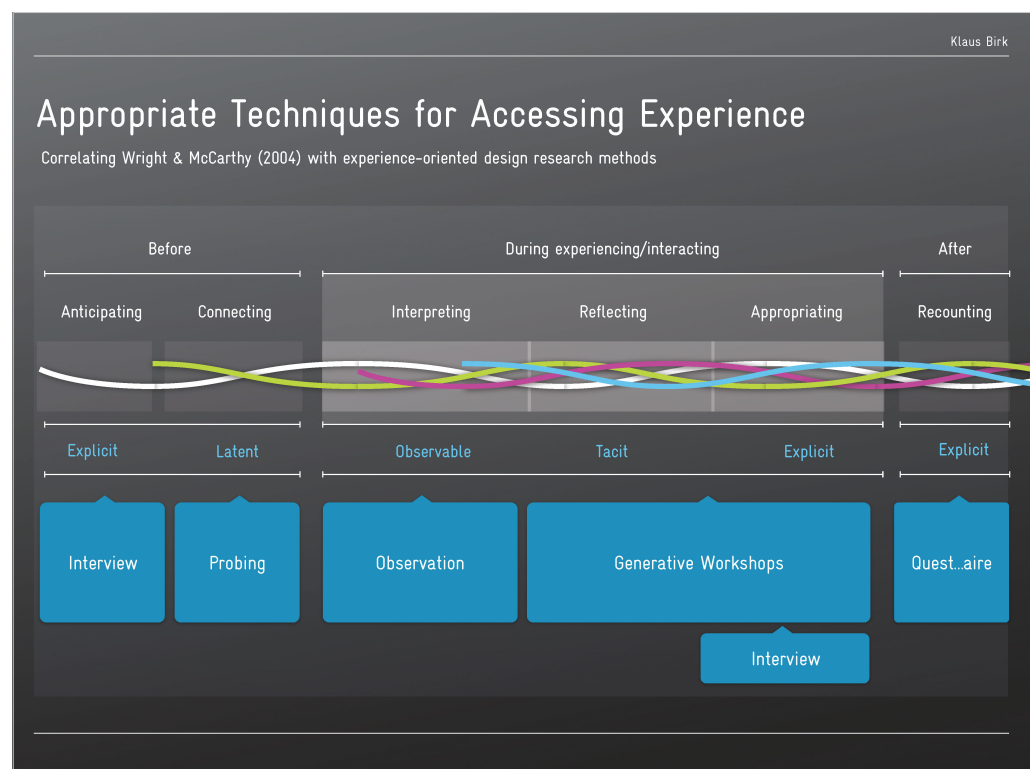


Illustration 2.6: Appropriate techniques for accessing experience, correlating McCarthy & Wright's "The threads of experience" with different modes of accessing experiential knowledge.

How can the experience of engagement with an urban digital environment be evaluated? As shown in the diverse understandings of experiences, it is an essentially subjective state of mind that develops and evolves through several stages of anticipation, interaction and recounting (Wright et al. 2003). Although the actual experience in its holistic understanding cannot be designed and thus evaluated directly, analysis methods from human-centred design and contextual inquiry in urban planning act as helpful tools for evaluation. Further, given the digital nature of architectural media spaces and today's urban communication infrastructures, the

³⁰ See for instance initiatives such as Metabolocity (2008-2013), a design initiative and project exploring the opportunities of applying design thinking and crafting to sustain and catalyse larger positive changes in urban environments. <http://metabolocity.com>

possibilities of sourcing and analysing large datasets of digital communication provide opportunities to gain empirical insight into how urban spaces are perceived and annotated, thus developing meaning³¹.

In an effort to analyse the process of experiencing itself, McCarthy and Wright dissected it into six stages, ranging from initial anticipation, interaction and reflection to evaluation and recounting of the experienced situation (McCarthy & Wright 2004). Each stage, although at some points coinciding with others, reveals certain levels of knowledge, which need to be accessed differently in terms of applicable research methods. For instance, during the anticipation phase, expectations are established that can be expressed explicitly by an individual. Forms of empirical inquiry such as questionnaires or structured interviews are applicable here. The subsequent “connecting phase” is described as the immediate, pre-conceptual and pre-linguistic sense of a situation, before any cognitive engagement. Obviously, experiential aspects in this phase are latent and thus not expressed or observable. Here, methods such as sensitisation packs (context mapping) or cultural probes are more appropriate (see Sections 2.3.3 and 2.3.4).

Based on this structure, the evaluation of experiential aspects of mediated architectural design can build on a scaffolding of combined quantitative and qualitative methods and include these in a cooperative design process. Depending on the situational setting of the space to be designed, emphasis can be put on the diverse, individual compounds that comprise an experience, such as cognitive engagement (content relevance, expectations, needs), activity (usage and active contributions to the content), emotional response (surprise factor, well-being) and aesthetics (in relation to spatial context, users and project participation). These can be traced through the above-mentioned techniques and are already influential during the conceptional and prototyping phase.

Given the dynamic nature of mediated architectural environments and the content being displayed, the continuous tracking and gathering of data^{32,33} about usage and behaviours (e.g. Nagel et al. 2016; Otten et al. 2015) can also be used as an informing element of a cooperative/participatory approach to dynamic Media Architecture, even after the actual installation and realisation of a project. This happens, for instance, based on urban computing and sensor networks distributed across today’s city-scapes (Lund & Lund 2013). These networks allow access to “hard” datasets on media

31 See, for example, current work at Urban Complexity Lab, FH Potsdam Germany or the MIT Senseable City Lab, Boston, Mass.

32 Examples are the previously mentioned platforms for accessing real-time sensors in the environment, such as www.pachube.com and the OpenSpime initiative www.openspime.org

33 The MIT Senseable City Lab is highly active in the field of sourcing urban real-time network data as a key element to set up and improve, for instance, dynamic mobility services. <http://senseable.mit.edu/>

usage in urban environments (i.e., data that can be empirically evaluated on the basis of the large amount harvested). Mapping against other sets of *big data*, for instance, certain content types that are displayed in a media environment when measured activity is extremely high, yields new assertions based not only on realistic but also “real” test settings. The analysis takes place in real time, without forcing test persons into a virtual/artificial setting or situation, as they are using the technology to which they are accustomed. In 2007, Bruno Latour noted that the consequences of real-time sensor networks within mediated architectural spaces “will be enormous: (the social sciences) can finally have access to masses of data that are of the same order of magnitude as that of their older sisters, the natural sciences” (Latour 2007).

While these examples show how a variety of available digital datasets in urban environments can be put to work in a creative research context, they are in essence retrospective procedures (Birk 2013). Based on already existing integrations of digital media structures, these procedures can be used to observe and analyse past or current digital behaviour using data sources from mobile phones or apps on geolocation, public transport check-ins and other aspects. Essentially, mapping and cross-matching these empirical datasets is a deductive research process that makes assumptions on the future based on events in the past.

When it comes to design for media experience, urban data sourcing can be a helpful tool to connect with larger groups of individuals for testing or to tap into currently available location-based information as a content provider for Media Architectural installations. However, the experiential focus of this research led to a more agile, qualitative approach to practical research. The following sections provide an overview of the methods applied in the first stage of reflective practice.

2.5 Reflections through Design Practice

Chapter 2 thus far has been concerned with reviewing foundational literature sources in the thesis' main area of research. Based on initial definitions of recurring concepts such as spatial media, public space and experience, relevant theoretical perspectives have been identified. This section is laid out as a practice-led counterpart, extending the initial literature review with a set of practice-oriented reflections on the definition, properties and processes of Media Architecture.

2.5.1 Overview: Methods of Reflection

Design practice based on a combination of diagnostic as well as action research methods informed this research stage. Communication design is both subject and method in this respect, providing ground for secondary analysis, paired with practical tools for (action) research.

Literature Review

The literature informing the research in this stage is from a variety of disciplines, spanning from urban planning and design for interaction and experience to participatory and human-centred strategies in design. Historical and philosophical texts on digital and physical space, “dialogicality” and pragmatist experience add to this. To cope with the growing list of publications, proceedings and research papers in the field, digital search and archiving software were applied (i.e., *Papers*, *DevonThink*). Due to dynamic developments in the field, conference proceedings on urban informatics and digital urban environments and digital visualisation also proved useful. Related repositories from HCI-oriented publishers such as *ACM*, *IEEE* and *Springer* were valuable sources. Major relevant research institutes identified through publication sourcing included the QUT Department of Urban Informatics Brisbane (“Urban Informatics”), CAVI at University of Aarhus (“Participatory Interaction Design”), the MAI Media Architecture Institute (“Media Architecture”) and UCL Bartlett (“Urban Digital Interaction”).

Online sources also contributed significantly to the current contextual research. In addition to the digital research repositories, several mailing lists³⁴ focusing on design research, interaction and technology were useful as tools to engage with the com-

³⁴ Among these are the PhD-Design research mailing list (<http://old.nabble.com/PhD-Design-f2151.html>), the Urbanscreens mailing list at (http://listcultures.org/mailman/listinfo/urbanscreens-L_listcultures.org), Dorkbot London mailing list (<http://music.columbia.edu/mailman/listinfo/dorkbotlondon-blabbler>) and the IXDA Interaction Design Association mailing list at <http://www.ixda.org/discussion>.

munity. Additionally, a substantial range of online blogs by academics and researchers provided opportunities for prompt exchange of thoughts on new developments and trends in the field. Prominent examples are *cityofsound.com*, a blog maintained by designer and urbanist Dan Hill, who leads Arup's global Foresight+Innovation Team and works and writes extensively on the intersections of architecture, digital interaction, media and culture; *digitalurban.org*, a research blog by Andrew Hudson-Smith, a senior research fellow at CASA and director of the MRes in Advanced Spatial Analysis and Visualisation at UCL who publishes widely on digital urban infrastructure and data mapping/visualisation on an urban and geographic scale; *urbaninterfaces.com* by the interdisciplinary Department for Media and Culture Studies (MCW) at Utrecht University; and the *Connecting Cities Network*, a worldwide arts network of media façades, urban screens and projection sites. Feeds such as these were considerably useful to trace contemporary projects and discourse for further investigation. During the first stage of this research, two research blogs, *expanded.memory* and *built.information*³⁵, were maintained for reading, referencing and reposting useful material.

Practice Review

Accompanying the literature review, several design and visualisation methods were applied as exploratory tools of action research in design. *Visual mapping techniques* were applied as a method for visual exploration of the literature and related conceptual paradigms (see 2.5.3). Similarly, a timeline map for a selected range of Media Architecture projects was developed to generate a visual approach to the development of the field of practice. In a further step, a first version of an *interactive digital database* was set up as an archive tool for documenting Media Architecture projects (see 2.5.4). At a later stage, this database provided material used for functional prototyping to generate several interface-views on the data for visual and interactive access.

Interviews and Studio Visits

A series of semi-structured interviews and studio visits with selected professionals was used as part of the diagnostic research approach (see 2.5.5). These interviews built on knowledge gained from the literature and project reviews. They helped revisit aspects from theory and mirror them to the practitioner's reality. The studio visit was an additional element to apply observational methods and focus on aspects that arose during the interviews. Interviewees came from architectural, artistic and academic backgrounds and included: Dieter Brell (*3deluxe*), Els Vermaag (*LAB[au]*), Se-

35 Expanded Memory (2008 - 2012) was a Posterous microblog I maintained at <http://strgn.posterous.com/>.

built.information (2008-2012) was the blog accompanying this research project and acted as an aggregation of sources related to my research: <http://www.builtinformation.org/>

bastian Oschatz (*MESO*), Jon Hodges and Miriam Sleeman (*Jason Bruges Studio*) and Sebastien Noel (*Troika*). The interviews were also applied to examine prototyping cultures within various studios and professional contexts. This included feedback on typical project setups, development stages and techniques for functional and aesthetic explorations.

Conferences, Exhibitions, Lectures

Conferences and related exhibitions were a valuable tool for keeping track of the constantly evolving field of research and provided opportunities for networking and exchange. Important conferences included the *Media Façades Festival Berlin* (2008), *Urban Screens Amsterdam* (2009), *V&A Decode Exhibition London* (2010), *The Well Connected City Symposium, Imperial College London* (2010), *Media Architecture Biennale Vienna* (2010, 2012, 2014) and *Media Architecture Conference Weimar* (2010). Lecture series provided a constant flow of input and professional exchange during the first stage of this research. Among these were the architectural lecture series *JourFixe* at *ABK Stuttgart*, *Department of Architecture/Digital Design* and Achim Menges' *Expert Lecture Series* at the *Computational Architecture Faculty University Stuttgart*. Both featured a range of internationally recognised practitioners in the field of digital architecture and urban design.

Dissemination and Peer Discussion of Findings

Intermediate results and findings from the first stage of research were presented and discussed at several research venues and conferences such as doctoral symposia (RNUAL) as well as in the context of research conferences on communication and experience design in spatial environments. Among these conferences were the *Planetary Research Collegium Conference (MHMK)*³⁶, the *DCC10 on Design Communication (Aarhus University)*³⁷ and *Space: The Real and the Abstract (CADRE, University of Wolverhampton)*. Additionally, early findings were presented and discussed in academic discourse through student lectures on Media Architecture at BA and Mres courses (*Mres InfoEnvironments*, *DHBW Media Design Lectures*). Participation in subject-related workshops included: *Creating Content for Media Architecture* (*MESO*), *Open-Frameworks Introduction* (*OF-Community, London*) and *VisualisationSensingSimulation – Rhetoric Functions of Public Displays* (*MIT SenseableCityLab workshop at Media Architecture Biennale 2010*).

³⁶ <http://www.planetary-collegium.org/presentersauthors.html>

³⁷ <http://mason.gmu.edu/~jgero/conferences/dcc10/>

2.5.2 Classifications of Media Architecture

Essentially, the various practical reflection methods mentioned in the previous chapter complemented an extended literature review of Media Architecture and its topography as a field of practice. This section presents an overview of the diversity of characteristics and classifications attributed to the field of practice over the last decade.

The term Media Architecture can be broadly applied to a wide variety of permanent and temporary projects. The individual project's context of urban setting, building structure, intended mode of usage and technical and monetary capacities as well as the commissioning party itself all have major influence on the development of such a project. To provide an overview of existing approaches to classifications, a summary of several possible categorisations of Media Architecture and its usage has been compiled. These categorisations originate from architectural theorists and practitioners, in the case of Sauter and Fleischmann, and from media artists and researchers. They seek to cover perspectives on technology, purpose, content and spatial integration.

Classification Based on Purpose

"(...) most screens serve mainly commercial purposes, showing objects in different scale and proportions without taking into consideration the surrounding environment". (Fatah gen. Schieck 2006)

In her early article, *Towards an integrated architectural media space*, Ava Fatah categorised potential applications of architectural media walls according to four major purposes:

- *Entertainment*, as on the Las Vegas Strip ("Screens generate a scattered landscape of tempting advertising images")
- *Business*, exemplified by the Manhattan NASDAQ ticker, broadcasting live financial news, information on events, market highlights and advertisements.
- *Art and Entertainment*, as seen in the architectural projection on the HPN Headquarters in Rotterdam, where content displayed is partly based on a participatory design concept, including the public as well as art students

- *Recreation and Entertainment*, for example, The Crown Fountain at Millennium Park in Chicago, which shows community-related video sequences on a glass block tower, using a very subtle but engaging action

Three of the four mentioned purposes dealing with aspects of entertainment in architectural media spaces. Fatah differentiated between two major ways of utilisation – “events” and “social interaction”. These relate to her comparison of temporary projection technologies versus more or less permanent LCD screens.

She mentioned that architectural media integration for events by definition needs to be more flexible, for instance, as large-scale projections. However, such integrations are often less integrated, meaning that architectural structures are being used as mere canvasses that are not necessarily related to the specific location or form of the building.



Illustration 2.7: Rafael Lozano-Hemmer, “Body Movies, Relational Architecture 6”, 2001. Here Museum of Art, Hong Kong, China, 2006. Photography © Antimodular Research, licenced under CC BY-NC-SA 3.0 ES.

Situated and artistic projections often make use of interrelations between technologies, spatial context and active participation, creating new forms of spatial and social interaction. Lozano-Hemmer’s project “Body Movies”, for instance, is a situated artistic installation that allows the audience to engage with the projection using their own shadows to reveal a superimposed projection of moving imagery. The projection

creates a medium, as the audience is not only reacting to the projection but also interacting with the shadows of strangers on the site. Thus, a new mediated physical situation is established, using virtual imagery and architectural light sources.

Classification Based on Applied Technology

A prominent account of Media Architecture as a relatively new field of architectural practice is given in Häusler's overview of contemporary projects (Haeusler 2009). His understanding of media façades and his proposition on how to categorise them mainly draws on an earlier classification model by Alexander Wahl, published in 2002 (Wahl 2002). Wahl initially suggested seven categories in relation to the technical or structural nature of a media façade:

Projection façades are a fairly simple and cost-efficient way of mediating a built structure. One or more projectors are set up at a suitable distance and allow for visual dynamics on the building without changing the physical structure of the façade itself (e.g., Lozano-Hemmer's project mentioned above).

Back projection façades use a projector setup behind a translucent projection surface. During the day, this surface allows daylight within the building while at night, it reflects visuals from a projected light within the building³⁸.

Display façades with cathode ray tube (CRT) or light emitting diode (LED) technology use modular screen elements, which can be arranged on larger surfaces attached to the building façade. These technologies usually allow dynamic imagery that is visible during daylight and are thus often used in a commercial context (i.e., dynamic billboards) or as information displays³⁹.

Window raster animation uses existing fenestration structures as display grids where each window functions as a pixel element. With the increase of electronic building management technology and integrated bus systems for controlling window shutters and lighting, it has become relatively simple to interface computer-generated imagery with these systems. Low resolution visuals and patterns are possible with this approach⁴⁰.

38 For instance, the back projection façade at Collegium Hungaricum Berlin, a venue for the Media Façades Festival Berlin 2008 and 2010

39 Extensively used at central metropolitan nodes such as Times Square in New York and Piccadilly Circus in London.

40 Popular examples include Blinkenlights by ChaosComputerClub Berlin and the NIX project by realities:united

Passive media façades utilise visual effects created through layering and arranging materials and structures on a building's skin. Often, such rasterised or typographic structures create a sense of immateriality of the façade⁴¹.



Illustration 2.8: An example of an “illuminated façade” by 3deluxe: LED Media façade for Zeil Galerie Frankfurt/Main, Germany, 2010. Photography © 3deluxe: Emanuel Raab, Sascha Jahnke

Illuminated façades have lighting systems that are integrate into the actual façade, often realised as double-skin façades. The outer skin is translucent while the inner skin is used for static and light reflective purposes. The actual light sources are placed between these skins. The lighting technology can range from simple fluorescent light tubes to LED elements/grids that are controlled by a digital controller system. There is a great variety of illumination façades in terms of resolution and imaging capacity. A recent example was presented at the *Zeil Galerie*, Frankfurt/Main.

Mechanical façades use mechanically driven elements arranged in larger structures that change the appearance of the façade. Such a physical screen integration can be technically complex, depending on the desired visual resolution, and thus is relatively expensive⁴².

⁴¹ Jean Nouvel's Köln Turm is a large-scale example of an abstract, passive façade. The Times building in New York features a passive typographic façade screen, the “Technorama Façade”.

⁴² Mechanical façades have been applied, for example, at the “Institute du monde Arabe” in Paris by Jean Nouvel and the “Digital Water Pavillon” at the EXPO 2008 in Zaragoza, Spain. An interesting concept/prototype for mechanical façades is the “Flare Façade” by WHITEvoid, Berlin. <http://www.flare-facade.com>

Spatial dynamic façades are façade structures, reflecting a three-dimensional approach to a screen grid system and representing dynamic visuals not only by reflecting colour variations as a two-dimensional Cartesian system but also in terms of their orientation on the z-axis ⁴³.

Classification based on spatial integration

In the article mentioned earlier, Ava Fatah looked at large-scale displays and projection screens as an emerging attribute of urban spaces in major metropolises (Fatah gen. Schieck 2006). She is specifically interested in the processes of implementation of media walls when looking at design strategies for an integrated architectural media approach. Fatah considered an integrative spatial design approach as essentially including a triangular constellation of the following dimensions of space:

- *Urban space*
- *Visual information space*
- *Social interaction space*

This definition follows Broeckmann's "strategies of articulating the new public domains that connect physical urban spaces and the potential space created by the new media and technologies" (Broeckmann 2000). An essential task following such strategies is the materialisation of the digital levels of the city on the physical urban structures and the potentials of unmediated communication (Mitchell 1995).

Fatah emphasised that this integrative approach can only be successful on the urban level if displayed content and output technologies are "embedded in the architecture of the building and become part of the emergent space and perhaps space-defining elements themselves" (Fatah gen. Schieck 2006).

Classification Based on Content

Joachim Sauter identified four types of mediations of an architectural façade. His definition is fundamentally based on how any given audience is addressed by or involved in the mediated situation (Sauter, in Fleischmann et al. 2004). He essentially distinguished between auto-active, reactive, interactive and participative media applications.

⁴³ Examples are the *NOVA* 3Dd light sculpture developed at ETH Zurich; *Aegis Hyposurface* by DECOi office architects and Mark Goulthorpe; and the *SpatialDynamic Media System* by M. Hank Häusler.

An *auto-active situation* is generally present when moving images are replayed on a dynamic façade structure. The visual material can be material produced by the façade designers themselves or site-specific content designed individually by media artists or designers. There are also examples that include design content developed by the public or a web community to be displayed and replayed on the auto-active media façade. The projects *Blinkenlights* and *Arcade* by the ChaosComputerClub in Berlin can be seen as typical applications for such auto-active screens as they use dynamic visual material developed by the public using a website tool⁴⁴.

Reactive façades listen to their immediate environment. Sensors are used to allow the installation to sense changes in its surroundings and let the display react accordingly. Diverse factors can be traced and used to alter the mediation, including weather data, numbers and movements of passers-by, electromagnetic waves, climatic information and infrastructural data of the building itself, such as electricity usage or IT network traffic⁴⁵.

Interactive mediations allow for a dialogue between users and the architectural display. Via installed computational interfaces and tracking technology in the surroundings or mobile devices such as smart phones, the façade can be altered by adding content to it or can act simply in a playful way. *SNIFF*, an interactive public projection by Karolina Sobecka in a gallery window, is a typical example, showing that users do not necessarily need to be humans. *Climate on the Wall*, a projection playing on the interactive component of mediated façades, allows users to establish a dialogue not only between themselves and the digital installation but also across passers-by in several time layers⁴⁶.

Participative architectural mediations enable the public to engage with the specific mediated situation and to use and alter the display according to their own wishes and ideas. Participative installations provide the advantage of recognising the public not only as a passive audience or source of media content but also as a key factor for identification with such a medium. Put simply, the façade enables community building. The participation of the public in *Blinkenlights* and *Arcade* was a main reason for their success in creating a globe-spanning community⁴⁷.

44 The Blinkenlights project originated in 2001 and was revamped as "Arcade" for an installation in Paris in 2003 and as "Stereoscope" for an installation in Toronto in 2008. <http://blinkenlights.net/>

45 An early example is Christian Möller's Zeil-Gallery installation "Networked Skin" from 1992. More recently, Jason Bruges Studios developed a reactive façade for the EireCom Tower in Dublin (2009) that traces IT network data and the W Hotel in Leicester Square, London (2011), an architectural installation responsive to the surrounding visual skyline.

46 "SNIFF" – a public interactive projection. <http://www.gravitytrap.com/sniff/>
"Climate on the Wall" developed by the Center for Digital Urban Living at Aarhus University. <http://www.digitalurbanliving.dk/>

47 Another participative architectural mediation is the previously mentioned "Body-Movies" installation by Lozano-Hemmer.

For Sauter, reactive, interactive and participative aspects of a mediated architectural façade transform the dynamic media skin (the screen) to a permeable membrane, communicating otherwise unnoticeable interrelations and thus turning the invisible visible and inside out.

Classification Based on Architectural Parameters

Odilo Schoch proposed a network of situative, technological and content issues as a foundation for categorising Media Architecture. Essentially, he differentiated between foundations and parameters, where the foundations are defined by typologies of displays, spaces and content. He identified three main categories of contemporary large-scale public displays (Schoch 2007): add-on displays, media façades and buildings designed with media technology as a main element. In his view, large-scale public displays are mainly situated on streets or spacious areas. Additional spatial categories for urban displays and Media Architecture in general are:

- Streets
- Details and distances
- Backlighting
- Trees and water
- Connected displays
- Spatial folding of an image around a building

Looking at the visual appearance of large-scale displays, Schoch identified interrelations between form, size, content and technology of such applications and proposed the following equations:

- The more architecturally integrated the screens, the simpler the technology.
- The more complex the form, the more abstracted the content.
- The larger the display, the more abstracted the content.

In a comparison of structural and formal attributes of Baroque architecture to their use in contemporary large-scale displays, such as the use of light and shadow, illusionary effects, symmetry and ceiling frescos, he highlighted apparently neglected attributes in contemporary media applications. These include the use of:

- Ornaments
- Large-scale ceiling frescos
- Blending of painting and architecture
- Design from ensemble to single parts
- Spatial differentiation by sequences of levels

The reasons for his interpretation of these attributes as missing remain unclear, especially as at least three to four of these are applied in contemporary Media Architectural practice (see *Greenpix* by Simone Giostra & Partners, *Spots* by realities:united or *Lightstrive* by MESO)⁴⁸. However, drawing a connection with Baroque architectural attributes and their relevance for categorisation can be seen as a plausible step when acknowledging Media Architecture as a technological continuance of architectural iconography and illusion (Venturi & Scott Brown 2004; Clausberg 1996; Panofsky 1991).

In terms of the informational potential of Media Architecture, Schoch also acknowledged Fatah's levels of attraction of architectural large-scale displays (i.e., eye level, car level and from highway) but highlighted the neglect of individual architectural context and the impact of media displays on the presented content. In this sense, he added influential parameters related to built context, audience and display, which are derived from the foundational aspects and his equations. While these networked categories do not appear to be consistent enough to have evolved from broader analysis, his proposition of additional structural and formal strategies based on qualities of Baroque architecture can surely be taken further. However, the emphasis on interrelations of situated-ness, technology, audience and content supports a holistic spatial design approach, which was also been underpinned by Fatah.

⁴⁸ This can be found in the [Media Architecture Database](#) related to this research.

Implications

The approaches to characterising mediated environments outlined above spotlight different sets of media characteristics and their relevance within the urban environment. Interestingly, all the named descriptions were developed by practicing or trained architects, with the exception of media artist and educator J. Sauter, who was the only one to make a content-oriented attempt toward the analysis of Media Architecture. All other descriptions share a prominent technical or architectural-physical understanding of determination, and even Sauter's point of view seems more concerned with functional and behavioural aspects of technology (e.g., "reactive" or "auto-active" media façades) than actual content, which here means types of displayed messages or their purpose within the built environment.

2.5.3 Conceptual Schemas

In addition to gathering literary resources and to gain a deeper understanding of the area of research, the various categorisations initially led to a visual aggregation of the contextual influences of this study.

Graphical mappings or "design schemas" (Nelson & Stolterman 2012, p.7) of literature and practice examples were based on the conceptual triangulation of users, content and environmental context as well as Fatah's differentiation of the urban, visual and social properties of situated architectural media. At the outset of this research, these approaches helped to literally map the territory and served as the groundwork for a growing list of practice examples of Media Architecture. Information on form, function, technology and spatial orientation was gathered and supplemented by descriptive information on initiators and participating individuals, purposes and intentions as well as examples of dynamic visualisation. The growing number of project overviews led to the development of a first iteration of a digital research archive (see Section 2.5.4).

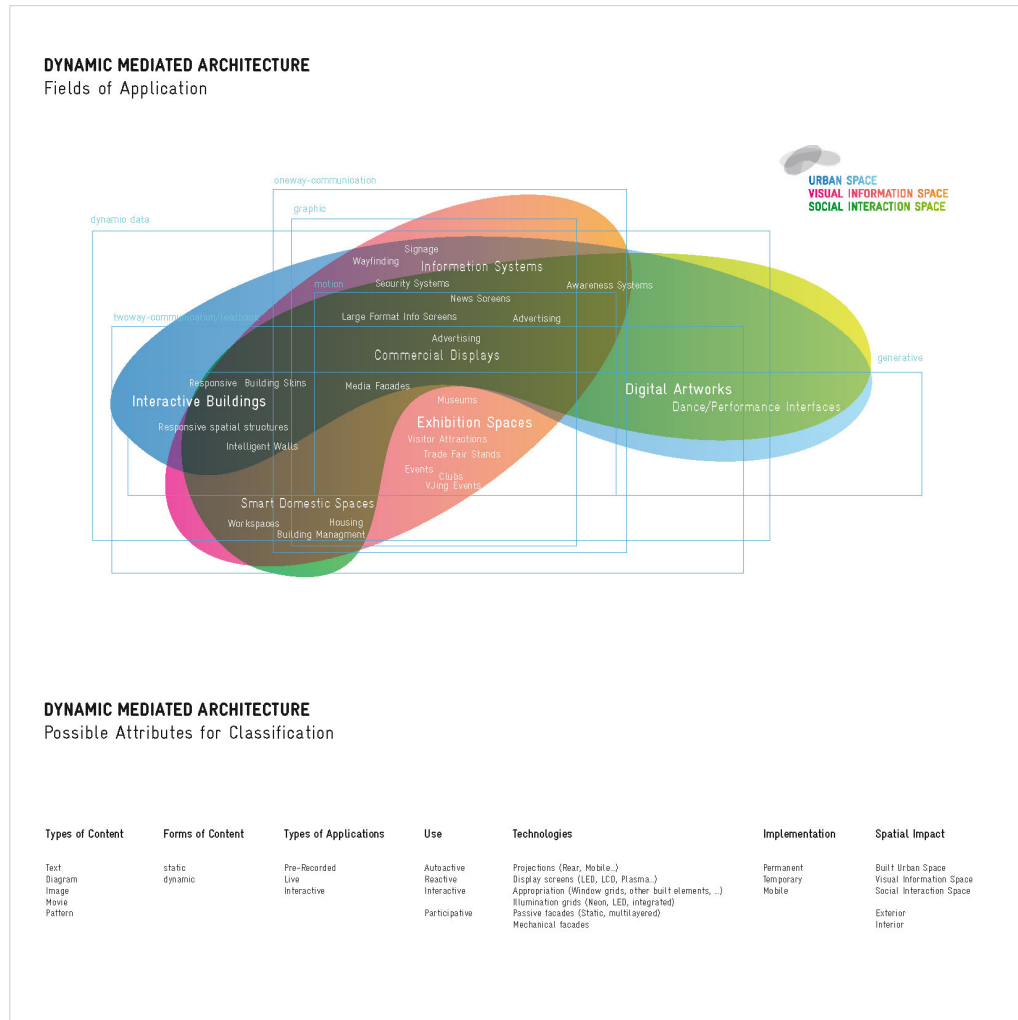


Illustration 2.9: An initial map of applications and classification of dynamic mediated architecture

DYNAMIC MEDIATED ARCHITECTURE

Mapping Related Literature

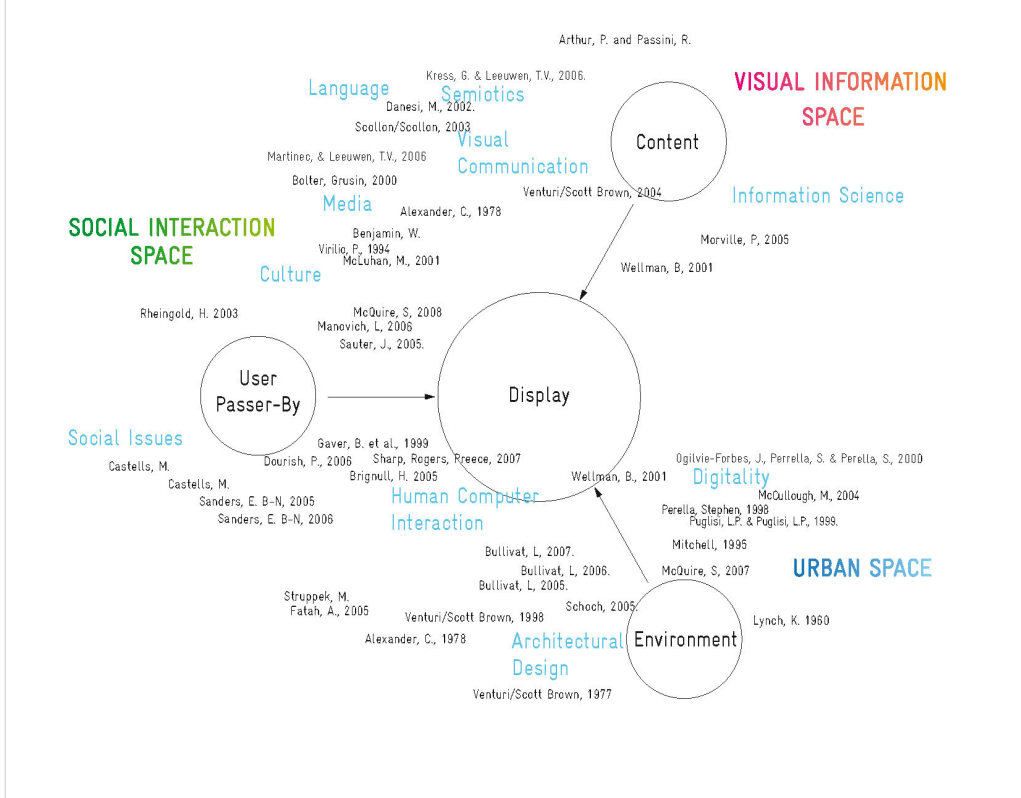


Illustration 2.10: Initial mapping of related literature

2.5.4 MA Archive

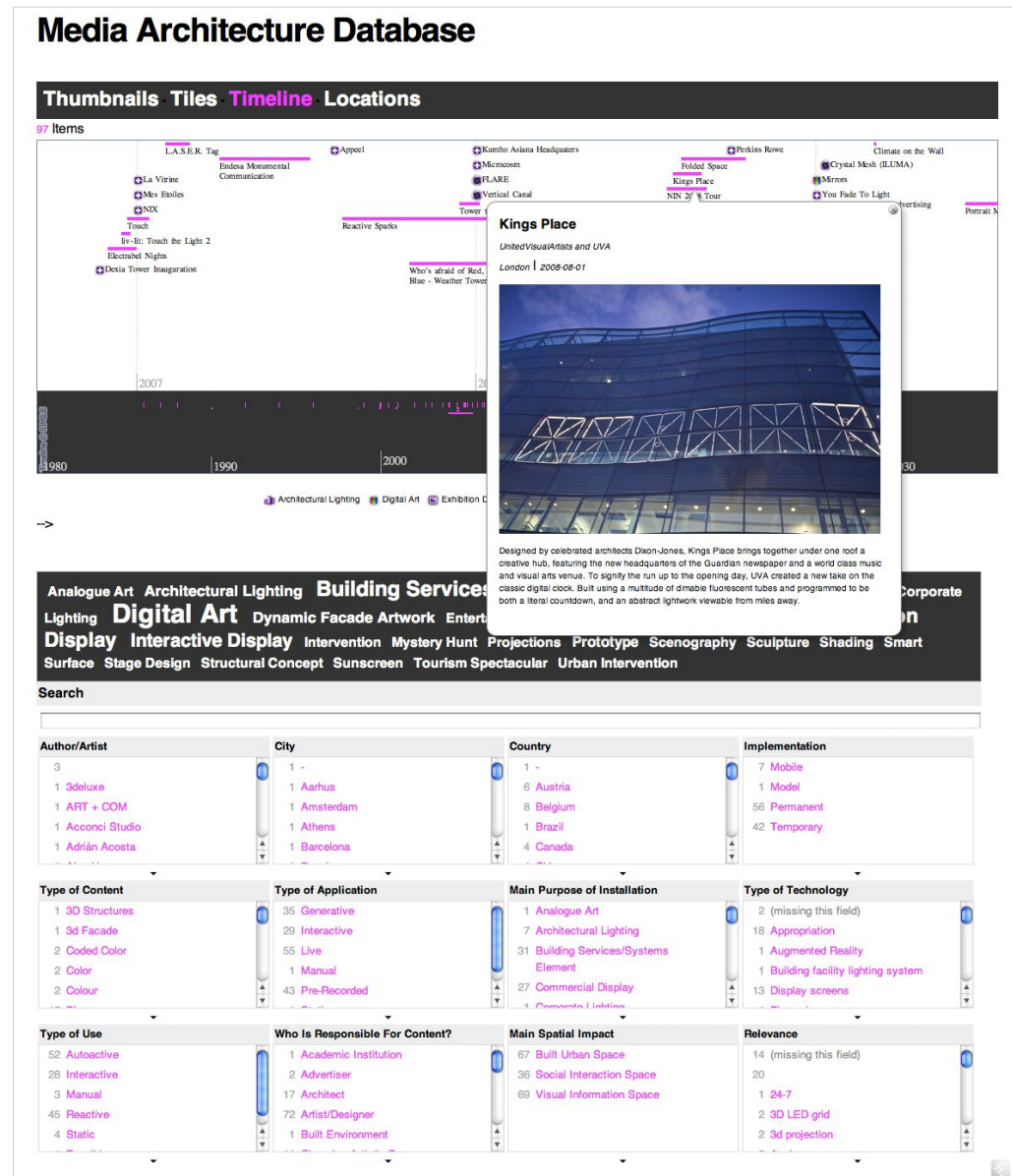


Illustration 2.12: Screenshot of online Media Architecture Database in Timeline-View.

As part of the contextual review related to current practice, an online project data-base for Media Architecture and public spaces was developed and grew continuously growing alongside the project (see 7.2). The projects were documented visually with images, videos and geographic coordinates. Project descriptions and links were used as textual references. Using a combination of systematic categorisations informed through literature, each project is tagged in terms of its primary intention, technical implementation, types of content, dynamics and usage, and an assessment of its spa-

tial impact is provided. Using combinations of thematic and characterising tags as well as diverse visualisations of the underlying data, the database was utilised as a project archive with faceted searching capability. It also allowed the deduction of knowledge from the dynamics and dispersal of certain content or usage features across the archive. In synthesising the various approaches to classifications of Media Architecture mentioned in Section 2.5.2, it also tested their practicality and appropriateness for experiential design processes in this context. The database was set up using the open-source *Simile Exhibit* framework⁴⁹. This framework allows the establishment of a web front-end for a Google database, with tailored interactive visual browsing through datasets using faceted search and filtering methods. In an online form, projects can be quickly documented, described and referenced in the database.

2.5.5 Interviews/Studio-Visits

As part of the diagnostic research approach, a series of interviews and studio visits with selected professionals were conducted to build on knowledge gained from literature and project reviews. The semi-structured nature of the interviews helped revisit aspects of theory and mirror them in the practitioner's reality. The studio visits were an additional element to apply observational methods and focus on aspects that arose during the interviews. Interviewees came from architectural, artistic and academic backgrounds and included: Dieter Brell (*3deluxe*), Els Vermaag (*LAB[au]*), Sebastian Oschatz (*MESO*), Jon Hodges and Miriam Sleeman (*Jason Bruges Studio*) and Sebastien Noel (*Troika*).

The interviews were conducted as in-person studio visits and Skype sessions, each lasting between one and two hours. The interviews followed a semi-structured approach, ranging from studio- and project-related subjects to perspectives on multidisciplinary and design procedures (see Appendix 7.4). A list of categorised questions was developed for each interviewee and served as a guide during the conversation. Following a brief introduction, two thematic fields of questions were covered: The first related to a specific *studio project*, in particular the overall project data, the conceptual design idea and the particular design process applied for the project. The second thematic field was concerned with *abstract thoughts* on Media Architecture as well as aspects of multi-disciplinary, experience design and co-creation as creative

⁴⁹ This is a visualisation framework originally developed by the Massachusetts Institute of Technology Libraries and MIT CSAIL <http://www.simile-widgets.org/exhibit/>.

strategies. In the case of combined studio visits, these fields of questions also led to a closer examination of visual material and/or form studies from the studio's actual design process in order to illustrate certain statements made during the interview.

From an analysis of selected transcripts, several critical strands of responses along the thematic groups were determined across all interviews. These can be grouped in two main thematic fields: *restrictions* in the design process and individual *strategies* to work with – or around – them.

1. Restrictions in the Design Process

In the following, the interviews unearthed several factors as restrictions for design processes in Media Architecture, for instance, *technical and legal regulations*:

“The resolution of the screen does not allow carrying out very sophisticated or detailed visualisations. However, I do not believe very much in that either.”
Els Vermang

“Die Fassade ist im Bauantrag eigentlich nur durchgegangen, weil es an dieser Stelle bereits schon eine solche interaktive Fassade gab. Sonst wäre das vermutlich gar nicht genehmigt worden. (...) Die Stadt ist da eigentlich eher restriktiv und skeptisch, was solche Projekte angeht.” Dieter Brell

“They’ve got risk assessment, safety systems, lists of what you cannot use, ISO1200100, Reg 3. of safety regulations. For them to pick up an LED cube from BARKO that is CE certified and to stick it there to see what happens with the content afterwards is the least of their problems because it is usually commissioned to another set of people after the building enters operation.”
Sebastien Noel

Additionally, Media Architecture and its prominent visual appearance is regarded as prone to *technology-driven and effect-oriented motivations*:

“I think that without context or relevance there is not much difference between that [media façades] and a cladding solution.” Sebastien Noel

“(...) nur um zu sagen, das Gebäude reagiert auf seine Umwelt, und wir können anzeigen, wenn 1000 Menschen drin sind, blinkt es mehr... das ist für uns eigentlich vorbei und macht keinen Sinn für uns. Das war im Jahr 2000 ein Thema, aber heute finden wir nicht mehr.” Dieter Brell

Some participants encountered a void in the contextual relevance of many projects in the field due to *unsatisfactory content development* and scenographic preparation, especially for permanent installations.

“Jeder Betreiber fragt sich natürlich, wie er damit Geld verdienen kann an solchen prominenten Plätzen. Sobald ich Bilder generieren kann, kann ich Werbung einbinden und Geld verdienen.” Dieter Brell

“Wir haben zumindest von Seiten der Programmierung extrem viel Varianz möglich gemacht und geplant um Abwechslung zu ermöglichen, gerade bei permanenten Installationen.” Dieter Brell

The application of digital visual interaction as a form of public involvement is seen as a relatively weak, *short-term strategy for awareness*, especially considering public connotations of technological overstatement and lack of cost-effectiveness, both economically and ecologically:

“Interessanterweise bestärkt [die Geschichte der Zeil-Galerie] unsere eigenen Zweifel an der Innovationskraft von medialen Fassaden heute. Wir haben das Gefühl, dass dieses Thema diese Kraft, die es vor 10 Jahren mal hatte, heute nicht mehr hat.” Dieter Brell

“Die Begründbarkeit der Interaktionsformen oder der Sensorik, die uns vor ein paar Jahren noch leichter gefallen wäre, zu fragen, was kann die Fassade denn, was macht die denn für einen Sinn, ist heute durchaus schwieriger. Von daher wollen wir diese Medienfassade auch gar nicht interaktiv verknüpfen mit der Umgebung, weil es aus unserer Sicht eigentlich nicht mehr zeitgemäß ist.” Dieter Brell

“Give me one good example [of interactive façades].” Sebastien Noel

As a major external restriction for design processes in this field, Sebastien Noel mentioned the notion of *convenience*. According to his experience, this is a major structural influence originating in the management and decision-making processes of larger multi-stakeholder art projects:

“However, what I am suggesting is that there are other types of problems that you will encounter, where design is not the result of design. It is the result of business management or the kind of system that you need to deal with.” Sebastien Noel

2. Individual strategies for an ideal design process

Considering the range of restrictions and problems identified by the interviewees, the interviews also provided insights into individual strategies for tackling these issues during the design process. One perspective included the notion of stressing *creative autonomy* both in terms of aesthetic design choices as well as in the individual perception as pieces of art rather than digital communication design. Els Vermang, for instance, indicated that *aesthetic abstraction* plays a key role as a strategy for sustainable design outcomes.

"So I think an abstract visual language enables people to do something with their own creativity. (...) Abstraction for me is a universal language. It is much more accessible than narrative or figurative works are." Els Vermang

An advantage of artistic perspectives on Media Architectural installations is that they follow a *platform approach*, inviting temporary travelling art pieces to a site. Flexible, non-site-specific art pieces gain more freedom and do not require detailed concerns about the permanent specificities of a location.

"I would say that it's nevertheless a responsibility to make sure that there is a wide scope of interesting art being shown. If you have a gallery, you also change the program of the gallery. That was really the idea behind setting up a database of artworks." Els Vermang

On the other hand, that very distinction between *art* ("free") and *design* ("restricted") has also been rejected, even more so when dissecting the claim of experience design as a discrete notion of design.

"(...) we don't make that distinction [between art and design], because I don't think it is relevant. To me, design, art is just like a tool, it is a methodology." Sebastien Noel

"Uns interessiert eigentlich nicht so sehr der Raum, sondern wie der Mensch unseren Raum aufnimmt. (...) Das ist bestimmt nichts Neues. Sei es zum Beispiel im Barock. Wenn ich mir solche Räume ansehe, wollten diese immer begeistern und die Menschen einfangen." Dieter Brell

"Design is an inclusive approach. Think of someone that doesn't design the experience". Sebastien Noel

As prominent characteristics in ideal design processes discussed by the interviewees, aspects of *contextualisation* and related methods repeatedly surfaced. This involves the activity of engaging in spatial contextualisation, historical relations of places, human mobility or social connotations in specific locations.

“What is the story of the place? What is the space itself? How do people move in that space? What does the space mean? Yes, it is very context-specific, but I think you can get that in different things. Maybe this is a reaction to how public art goes astray. It forgets about this anchoring into the context and becomes replicable anywhere. You can take the same thing and place it somewhere else. It doesn’t build a notion of locality or help fulfil the main brief of a big art commissioner who is essentially creating a landmark, a point in the city.” Sebastien Noel

“For us, the context defines a lot for a project. (...) For any other Media Architecture, I would really apply the same logic to work generatively, interactively and performatively, to really carry out these three axes.” Els Vermang

The nature of spatial media innovation and integration requires the coordination of a range of specialised disciplines. All interviewees underlined their appreciation of early and sustained collaboration with specialists, either within the team or with external partners. They highlighted *multidisciplinary approaches* as a way to evaluate technical or structural feasibilities. By including a diversity of perspectives, these approaches also added important facets to the creative ideation and iteration process:

“We have loads of different types of collaborators such as craftsmen, scientists, people who grow moss, people do electronics. Because our work is varied, we cannot have all the competences. It’s nice and something I enjoy.” Sebastien Noel

“Wir haben das Gefühl, dass die meisten Projekte dann gut werden, wenn sie verschiedene Leute in der Hand hatten, die auch unterschiedlich arbeiten. Das ist relativ verzahnt. Am Anfang ist der Anteil der Gestalter relativ größer. Aber es ist immer mindestens ein Architekt dabei, damit die Gestaltung nicht Dinge plant, die in der Umsetzung nicht funktionieren. Mittlerweile überprüft die Gestaltung manche Dinge noch, aber die Architekten haben das Projekt nun komplett bei sich. Das verschiebt sich im Projektverlauf. Aber wir wollen diese strikte Trennung von unserer Philosophie her natürlich vermeiden. So beeinflussen bei uns die Architekten auch gestalterisch viel, und ebenso im weit-

eren Verlauf, wenn in der Ausführungsplanung Dinge verändert werden müssen, wird auch der Austausch mit den Gestaltern wieder gepflegt. Wir versuchen, hier schon die Verzahnung aufrecht zu erhalten.” Dieter Brell

Although an ideal approach, the extent of such collaboration varies significantly. This is especially true for early and direct communication with commissioning parties. Here, good practice seems to include executive management as early as possible in the design and ideation process. A review culture of small-circle meetings on a regular basis is regarded as essential to build confidence and significantly shorten decision-making processes during a project:

“Particularly in the case of Dexia, there was a lot of exchange to be able to establish what we did. What we did was really the result of a teamwork. The bank has been really supportive in anything whatsoever. This is certainly exceptional and I can imagine that some clients are more difficult to work with. An incredible amount of confidence has been built up during the exchange.” (Els Vermang)

“Wir haben wöchentliche Jour-Fixes/Meetings. In heißen Phasen auch erweitert zu zwei bis drei Meetings pro Woche für Ausführungsplanungen und technische Dinge.” Dieter Brell

“That I think, is where you begin to approach your problem of why media façades are how they are at the moment. I would much rather address the structural hierarchical pyramid that makes project commissioners work rather than the design thing.” Sebastien Noel

Overall, the interviews served as exploratory tools in the research process. They not only opened up issues of current design approaches in the field and related critical discussion, they also provided insights into opportunities for further practical investigation into design methods for Media Architecture, especially collaborative workshop (3.5.3) and the conceptual method framework (Error: Reference source not found) described later in this thesis.

2.5.6 Shift of Perspective

The strategies of visualisation through the conceptual schemas as well as the first instance of the MA Archive are promising in their ability to provide foreground to the cognitive structures that organise the various subjective, objective and imaginative design-thinking processes rooted in the contextual literature review.

Design Practice and Visualisation as Tools to Elicit (Inner) Dialogue

The results from the process of visually reformatting research sources in Sections 2.5.3 and 2.5.4 bring up distinct qualities of Media Architectural processes that themselves rely on high levels of dialogue and exchange for success. Similar to how an artist's creative process and the artefact created during this process cannot be separated, "it is the making of the artefact, even if intuitive, which determines the direction of the practice-led research process. Without the artefact, there is just the assumptive theory, which is separated from the actual process of making" (Mäkelä 2007, p.159). This focus on the artefact as a communication tool becomes apparent in the study of experiential design processes and their focus on human-oriented, multi-sensory experiences of situations and objects. Visualisations and design prototypes are used as a form of engagement with individuals and target groups.

In this sense, Media Architecture bears potential for digital urban communication that concerns more than only the physical object of an architectural display installation or the audio-visual content to be applied on it. Rather, the subject of mediation also needs to be approached as a form of communicative exchange and discussion that is already decisive for promoting the various steps of the design process: "(...) each step of the design is always a project in itself, judged not by its eventual product, but by its ability to initiate its own next transformation" (Lorenz & Staub 2011).

From the interviews, it became clear that designed artefacts and visual prototypes are an important tool not only for technical and aesthetic testing but also for negotiation with a variety of stakeholders, depending on the project stage. Visual artefacts are concerned with actual communicative effects in the spatial environment rather than solely with the built or visual form. This means that each stage of the Media Architecture process becomes a design task in itself, involving a process of discourse and mediation. This is similar to Ewenstein and Whyte's (2009) focus on objects as "iterative, even dialogical, processes through which knowledge is developed by both subjects and objects as agents" Can a design process for Media Architecture be based on

a reflective iteration of individual research perspectives through visual prototyping? This perception provides potential for further examination, from Media Architecture design and its phenomenology of dynamic and physical form in various urban manifestations, to Media Architecture design as an essentially discursive visual design process.

2.6 Summary

Chapter 2 set out to define the overall context of the research question before applying a set of design tools as a practice-oriented response to the initial research on Media Architecture. Building on the definitions of Media Architecture, experience design and public space design, Section 2.2 presented approaches to media space, in particular as built, visual, social and networking space (McQuire 2007; Venturi & Scott Brown 2004; Scollon & Scollon 2003; Castells 1996; Latour 1996). An understanding of space as an experiential interplay between humans and physical objects led to a focus on human engagement in spatial contexts and social interaction. Here, aspects of pragmatist thinking and understandings of subjective experience in relation to art and technology were discussed (Dewey 1980; McCarthy & Wright 2004).

An overview of design research methods was outlined to present strategies for inquiry into specific spatial and social contexts. In Section 2.4, participatory aspects of design processes led to a discussion of Media Architectural spaces as potential activators of social urban space. Participation and the notion of “desire” as a precondition for participatory engagement was discussed (Blundell Jones 2005; McDonnell 2009) and proposed for further examination as a design process for social capacity building in Media Architecture. The researcher’s practice-led reflections included conceptual and visual examinations *on* and *through* design. Based on an overview of classification approaches to Media Architecture, visual mappings presented a design approach to literature sources and their central motives. Categorisations for Media Architecture found in practice-related literature were then restructured according to insights from research on specific built examples and resulted in a project map. Initial static mappings were extended to an interactive version of a searchable visual archive, providing an overview of geographical, historical and contextual information clusters. A set of expert interviews with design practitioners and artists in the field was used to investigate potentials and shortcomings of Media Architecture, in particular those related to modes of design processes and aspects of multi-disciplinarity and participation in early conceptual design stages. The interviews were informed by the previously discussed methods of visualisation and archiving.

Theoretical investigations underlined the perspective of Media Architecture as a manifestation of media space and as a conceptual entity of built, visual, social and networking space. Specifically, the experiential interplay between humans and the digital and physical objects represented in Media Architecture provided insights for further exploration. As a shared experience of space, it was found to depend on processes of information, adaptation and engagement. Generative design research

methods were found to be suitable strategies not only for inquiry into specific local and social experiences, but also in terms of suggesting Media Architecture as a participatory communication design process for local capacity building. The initial development of visual mappings based on literature and practice proved to be useful as a means for conceptual reflection and externalisation of aspects of the field of study. Design schemas were helpful as a tool for visualisation, conceptualisation and structure (Nelson & Stolterman 2002, p.7). They invited a closer reading of Media Architecture and its contextual angles. As a strategy of organisation, the visualisations helped to develop ordered clusters of information and ideas and supported organised patterns of thinking for making cross-relations (i.e., literature, interviews, practice). As a design tool to gain design knowledge from theoretical sources, the visual models also represent a design strategy for taking experiential action. The MA project archive (see 2.5.4) represents such reflection-oriented design action.

The findings from this chapter in relation to spatial and experiential aspects of Media Architecture are thus:

Findings from the Literature

- Media Architecture is based on an experiential interplay between humans and digital and physical objects.
- Human engagement and social interaction is a key part of spatial media experiences.
- Information, adaptation and engagement represent key parts of shared experience.
- There are opportunities for the use of generative design research in Media Architecture as methods for experience-based engagement and local capacity building.

Findings from Practice

- Design schemas are useful as a tool for reflection on literature and practice through visualisation, conceptualisation and structuring context.
- Visual design action is an epistemic object (Ewenstein & Whyte 2009), “unfolding ontology” for inquiry in learning and understanding about the subject of Media Architecture.

- Visualisations and design artefacts are central communication tools in experiential design processes not only for technical and aesthetic testing but also as tools for cognitive reflection both internally as with external stakeholders (> interviews).
- Further focus for examination: From visual design in Media Architecture as mediated communication to Media Architecture as designing for discourse.

3 *SHIFTING FOCUS — DESIGNING (FOR) DISCOURSE*

3.1 Introduction

In light of the previously discussed notion of collective, joint experiences of urban media, this chapter turns to design as an experiential catalyst for exchange and discourse. It takes the strand of shared experience and participation further by generally looking at basic characteristics and preconditions of discourse in design processes as well as related experience design practice.

The chapter reviews design and learning methodologies for enabling as well as provoking participation, discourse and reflection in multi-stakeholder environments. It examines creative tools as core elements of situated, experiential design language and correlates reflective methods-oriented design action to conversational sense-making processes in experiential learning and capacity-building processes. This is crucial in following the overall aim of developing a methodological foundation for sustainable and engaging communication design in early stages of the Media Architectural design process. By adapting particular design workflows from related fields and practically experimenting with patterns of cooperation, the chapter lays the initial foundation for a prototypical collaborative methods framework (see 1.3, objectives 3, 4, 6).

The chapter starts by outlining discursive model-making as a condition for nurturing ideation as well as collaboration and exchange within professional constellations. It reviews constructivist perspectives on materialising design methods as language and discourse in order to engage with diverse professional and non-professional stakeholders. This is complemented by an expansion of the principles of conversational and experiential learning for design communication. It is argued that by embracing the concept of design as taking discursive action, responsibility and ownership, conceptual design for Media Architecture can develop relevance as a process for building individual capacities in urban media spaces.

The second part of the chapter adds to this rationale through practical reflection on design (for) discourse. Applying a combination of primary and action research methods, collaborative multidisciplinary workshops as well as professional case studies represent environments to practically build on initial theoretical reviews. Additionally, the application of visualisation studies and the redesign of the MAA, both tools originating from the researcher's own reflective practical process, are demonstrated as design studies for participation.

3.2 Creative Tools

“As agents in the ceaseless modelling and remodelling of our surroundings and the ways in which we interact, we may advocate the idea of a spatial multiplicity and co-production” (Eliasson 2008)

Design is a projective discipline: it is essentially the preconception of a future situation and how the designed object might fit into it. Therefore, it is vital for designers (and even more for the commissioning party) to gain an early understanding of a design before its actual completion. Especially in fields of practice where design decisions have larger implications in technical, financial or socio-spatial terms, design applies various forms of anticipation of an object and its details during the design process. Representations, whether they are hand-drawn sketches, virtual three-dimensional renderings or physical, functional models and interactive prototypes, help the design team as well as other stakeholders gain a sense of the consequences of design decisions by making these decisions tangible.

The act of doing and making, as pragmatist philosophy has already shown, is inseparable from creating knowledge and making sense of a situation. One of the main objectives of this research is to identify a framework of design methods and techniques for understanding and reflecting the digital/real nature of mediated built environments. From this perspective, it is necessary to take a closer look at the role of techniques and tools in design and how they can be applied in the creation of engaging and sustainable situated media experiences.

3.2.1 Designerly Practice

Design situations are situations of uncertainty and instability and are open to a multitude of approaches and solutions that often cannot be foreseen. In their under-determination and vagueness, these situations often entail a “wicked problem” (Rittel & Webber 1973) for standard inductive or linear approaches to problem solving. They have been described as “messy” situations (Schön 1983).

However, dealing with such messiness is essentially what constitutes the day-to-day context of any design practice. Research approaches to building an understanding of design deeply rooted in practice have been described and explored extensively (Alexander 1964; Schön 1983; Cross 2007; Lawson 2006; Thackara 2005). A common denominator in this line of research is a pragmatic understanding of applied design methods

not only as processes of iteration and rigour, which yield a better, faster or more economical solution, but also as a form of gaining insight and building knowledge through experimentation and creative adaptation. Donald Schön's well-established work on reflective practice eloquently described an approach to practice-led analysis and research that is different from the tradition of "controlled experimentation" in the field of science and traditional research.

"As (inquirers) frame the problem of the situation, they determine the features to which they will attend, the order they will attempt to impose on the situation, the directions in which they will try to change it. In this process, they identify both the ends to be sought and the means to be employed"
(Schön 1983, p.165).

Schön's concept of reflective practice links the productive nature of "doing" with an attitude of constant and deliberate reflection on the doing. This places a systematic procedure at the centre of any practice-related action while at the same time accounting for unforeseen situations and the "vagueness" of future-oriented design action. In this line of thinking, the designer's attention to the problem is constantly oscillating between the *whole* and the *unit*, the *global* and the *local*. "Each move is a local experiment which contributes to the global experiment of re-framing the situation" (Schön 1983, p.94). The inquiry developing from re-framing the given problem is "a reflection-in-action on a restructured problem" (Schön 1984, p.102), providing new options to a previously restricted or dead-end situation.

A major element allowing these shifts to happen is an attitude of questioning, of understanding design as a language. Applying design action (e.g., models or prototypes) as a form of asking questions, as a form of asking "what if", allows playing through the consequences of design alternatives. This testing process means a constant shift in stance; the design language moves easily, describing what *can*, *might*, *should* or *must* happen. It brings up opportunities to think through a problem based on its ability to facilitate new options. This leads to decisions within problem-solving activity, which then produce further implications. One can think of this process as a reflective conversation in which the situation is broken down or looked at from a different perspective, allowing the appreciation and development of further implications of this new perspective. The initial problem is re-framed, and a new problem is derived that can be solved with a coherent series of actions.

The simple questions above are reasonable for identifying and exploring new directions. They enable shifting from alternative to alternative and exploring options on the unit level. However, Schön highlighted that it is essential for the process to be fruitful and for the designer to consider further implications on a more global level as well, shifting his interest from mere “exploration to commitment” (Schön 1983, p.103).

Schön’s concept of framing and re-framing has been critiqued as being overly descriptive of formal processes rather than being content-oriented (Richardson 1990, p.14). However, in the context of identifying and deriving a methodology for Media Architectural conception, this may be an advantage in terms of transferability.

Schön identified a set of patterns of reflection-in-action across various professions and described them according to constants (i.e., certain requirements, actions and operational sequences necessary for reflection-in-action to apply).

Constants (Requirements)

- Inquiry begins with an effort to solve a set problem.
- Inquiry remains open to findings or “phenomena” that are incongruent with the original problem setting.
- These findings are used to re-frame the problem.

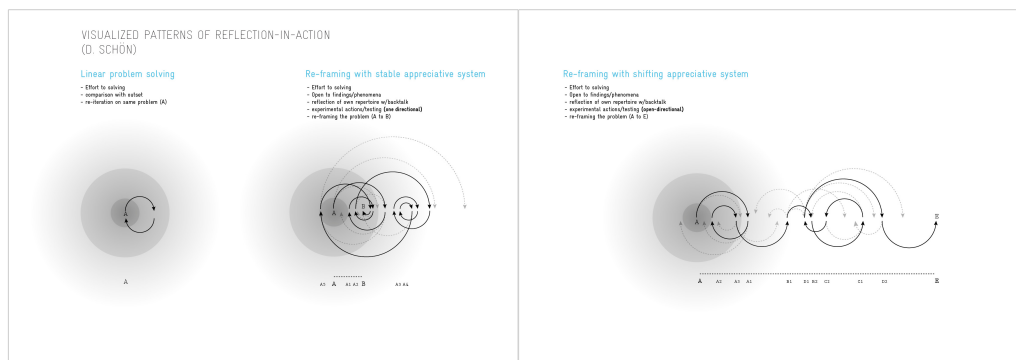
Constants (Actions)

- Inquiry turns into an experiment of framing.
- Inquirer keeps attitudes of both thorough analysis and framing a problem as well as listening and reflecting on the situation’s “back-talk”, which may lead to a new framing.
- Inquirer reflect on similarities of new phenomena with his own “repertoire”, which may lead to new hypotheses.
- These new hypotheses are tested in experimental actions to shape and explore the situation.

These requirements and actions used to describe the general mindset of a practitioner in a re-framing process are accompanied by elements of variation and adaptation to the situation at hand.

Variables

- Variations of media are applied in reflection-in-action (e.g., sketchpad, experimental models/prototypes, dialogue, relationship between practitioner and client).
- However, media and their influence are directly linked to language/repertoire in regard to how practitioners move and explore. Acquiring media skills is essential for practitioners (i.e., they are part of language).
- Practitioners develop a feel for languages/media to be applied in their field through experience. This is something that cannot necessarily be transferred to a novice level by developing formulas/descriptions of approaches and ways of thinking.
- A constant/stable appreciative system allows the initial framing and re-framing of a problem with a certain coherence. If the appreciative system shifts, the experiments and re-framings tend to be singular/detached episodes.



evaluation, framing and re-framing, a variety of methods and modelling tools are available. In the following, a short overview is given to outline basic principles being applied in architecture, interaction and service design.

3.2.2 Tools for Ideas

“(Design) should look for tools to support designers in their work. The human mind is fallible. Methods should be sought to amplify its abilities, even if it is only to keep us from falling prone to our idiosyncracies.” (Rittel 1988, p.7)

Tools are elements of human expression. They allow for the materialisation of an initially virtual idea and help the “user” take certain actions during this process. They can be applied in terms of efficiency/efficacy but also as helpers eliciting creative processes through their intended application or misuse.

“Design tool” is a metaphoric term; in the context of design, a tool is certainly not the same as a hammer or screwdriver and instead serves as a helpful artefact, assisting users to tackle complex ideas (Gänshirt 2007). Gänshirt’s description of tools is grounded in an understanding of design as a problem-solving activity. For him, it is an essential prerequisite of an initial design goal that lays out the path for the design process as well as the necessary and appropriate design tools that may help accomplish this goal. In this sense, there is an inherent objective relationship between designers and their tools. Tools not only determine the design outcome; they also influence the actual design process. This is similar to McLuhan’s correlation of medium and message, where the medium is not just a channel through which the message is communicated (McLuhan 2001). Tools can also be seen as a form of medium. They not only “make their mark” on the outcome of a design process but also actually shape the design process in the ways they enable a designer to reflect upon the given design problem or situation. Thinking and making, as essential elements of the design process, develop through the use of tools, just as the tools themselves gradually lose their “oppressive dominance” on the thought process.

Looking at the subject from an architectural perspective, Gänshirt separated tools for design into two groups: verbal and visual-spatial tools. He defined visual tools as those primarily used for devising form and verbal tools as those applied to develop the meaning of a design. However, it can be argued that while this distinction may be true in the architectural tradition of three-dimensional form-giving, it ignores, to some degree, a category of tools that are concerned with temporal aspects or interaction flows and may be more prevalent in other design areas such as HCI or service design. Such

dynamic tools focus on “experience-ability”; they not only contain and arrange visual objects in a static way, they are also used as a “gesture” to articulate a situation as experience. Olafur Eliasson, for example, noted: “In order to understand, inhabit and evaluate space, it is crucial to recognise its temporal aspect” (Eliasson 2008). Based on our understanding of experience, such tools need to address the different levels of human experience in terms of compositional, sensory, emotional and spatio-temporal “threads” (McCarthy & Wright 2004). Given that the context of this research touches on architecture and visual and interactive design, two additional categories are helpful. Accordingly, applicable tools can range from verbal (e.g., storytelling, personas, use cases) and visual (e.g., sketches, wireframes, moods, layouts) to spatial (e.g., 3D models, live-screenings) and sequential tools (e.g., functional and aesthetic prototypes, animation sequences)⁵².

Essentially, tools can be understood as gestures to articulate ideas. Within the design process, tools are used as a form of operational language, allowing the designer or originator of an idea to express his thoughts to other stakeholders in the design process. As we have learned with Krippendorff and others (Krippendorff 2006), user/human-oriented design processes in particular can be seen as highly discursive, containing several dimensions of making meaning. This includes meaning to fellow design professionals as well as to commissioning parties and stakeholders who do not necessarily have a design background or share the same “language” in terms of how they describe design. This problematic situation is especially true when it comes to an evaluation of design suggestions that are based on spatial relations or dynamic content. In the context of dynamic media spaces, both these characteristics are central to their understanding as built, visual-dynamic and social interaction spaces. Here, the concept of models as a means of design communication can be helpful. Models offer the most direct approach to dealing with spatial, structural or dynamic questions. They are tools that, in their perceptibility, come close to the spatial reality of the intended design while only covering certain specifically defined aspects of the final design. However, their primary intention lies in enabling experience of these aspects. As Axel Kilian put it: “(A model) is an incomplete but significant representation of the design idea” (Kilian 2008, p.209). Models are a design tool that has found wide adoption in three-dimensional design such as architecture or product design. They have also been correspondingly applied in graphic communication (layout dummies), motion design (animatics/composites), interaction design (functional prototypes, mock-ups) and service design (service models). Models support both practical *making* as well as conceptual *thinking* during the design phase. This shows

52 Sections 3.4.2 and 4.3.1 present methods that build on this extension.

the range of intentions for which they can be applied—from conceptional models for ideation to working and presentation models that come as close as possible to the final visual or functional appearance.

Mäkelä and Fulton Suri (2001) suggested the application of models and mock-up prototyping as a communication and collaboration tool for “pleasurable experiences”. These not only serve as small-scale or simplified experiential/conceptual prototypes but also enable designers to revise the ideation process. They also allow an instant and direct exchange between the participants during workshops, serving as a common, materialised language for the collaborative ideation of experiences.

Alex Wilkie noted that prototypes not only act as a material and semiotic form of experimentation, bringing together competencies and expectations in a process of ideation, but also have a tendency to enthuse, rather than to disappoint, and provide the opportunity to “enrol, mobilize and conscript heterogeneous allies as a means to strengthen the expectations they embody” (Wilkie 2010). For Wilkie, such properties are an ideal means of building capacities, thus developing concrete prospects from initial expectations in a constructive and positively engaging manner.

3.2.3 Lo-Fi Prototyping

Choosing a relevant model-making tool depends on either the project phase or the subject focus in the specific design situation. These tools are not bound to one defined project phase alone, such as early ideation or post-design prototyping. Rather, modelling tools as supporting methods can be found throughout the whole design process. A major reason is the practicability of actions involved in the application of a modelling method. However, at the same time, this can also be seen as a flaw. From a project planning perspective, there is often reservations about applying approaches to incremental design testing and prototyping, sometimes originating from budgetary concerns and sometimes from tight schedules, or both. On the other hand, the advantages arising from elaborate and thought-through prototyping applications are regarded as effective in decision-making processes, especially within larger team and contractor constellations (see Section 2.5.5).

The following short overview is a description of existing practices using low-fidelity prototyping tools. “Low fidelity” in this case refers to easily applicable tools requiring little or no previous experience with design methods prior to a prototyping session that lead to fast, yet refined results. Taken from a variety of methods in interaction design, service design and social design⁵³, the following examples illustrate overarching goals of low-fidelity prototyping: *playful envisioning*, *creating narratives* and *making tangible experiences*.

Playful Envisioning	Creating Narrative	Tangible Experience
Role Playing (verbal, sequential)	Group Sketching (visual, verbal)	Mock Up (visual, spatial)
Experience Prototypes (visual, spatial)	Touchpoint Matrix (verbal, sequential)	Interactive Walk Through (visual, sequential)
	Storyboarding (visual, sequential)	Rough Digital Prototyping (visual, spatial)

Table 2: Goals of low-fidelity prototyping

Tools for *playful envisioning* encompass design methods that engage users and designers in playful, joint explorations of design activities.

- *Role Playing* is a method often applied in the context of participatory or service design. Sample users or the designers themselves act as performers in a hypothetical scenario. The roles either correspond to previous research or are invented. Participants are encouraged to imagine, discuss and act out services or devices supporting them in a particular scenario. Depending on the provided context, narratives, incidents, roles and goals of the participants, the focus of the method can be individually determined. The “group interaction can be organized around an initial scenario leaving the players free to improvise, or can be influenced by predefined information” (Iacucci et al. 2000, p.196). An iterative approach to this tool is to apply it to the same scenario several times, with a changing set of character profiles. This provides the opportunity to project how different users would act in the same situation.
- *Experience Prototyping* is a simulation tool to anticipate the process of experiencing a product or service and its performance. It involves the application of specific physical *touch points* and interactive situations involving

⁵³ See for instance online method aggregators such as www.designmethodenfinder.de or www.servicedesigntools.org

them. The tool was presented by Buchenau and Fulton Suri (2000) as a way of allowing designers to test a solution through active participation of real users.

The second set of tools focuses on the creation of visual and interactive narratives for establishing, elaborating and communicating sequential courses of action based on an idea.

- *Group Sketching* is a fast and economical tool for both developing ideas and explaining them simultaneously. In the context of co-design sessions, it provides opportunities to share insights within a team of design professionals and external participants (Greenberg et al. 2012). As a visual tool, group sketching offers a common ground for discussion, especially when participants have different cultural and social backgrounds. The tool uses basic and simple visual sketching techniques to lower the barriers for individual visual expression and encourage participation of all participants.
- A *Touchpoint Matrix* is a detailed, visual mapping tool documenting the routines of a typical user, similar to user journeys. Everyday experiences with a service or product as well as the kind of media interactions necessary are mapped and described in a graphical mapping system. In a table-like overview, a user's typical activities and related needs, as well as the most likely used devices and the particular environments (touch points), are shown. The matrix provides opportunities to anticipate potential use cases that can be discussed and analysed with individual users. Additionally, it is relevant in contextualising experience within a pre- and post-interactive phase (Brugnoli 2009).
- *Storyboarding* is a prototyping activity derived from cinematography. It allows the visually descriptive representation of use cases through a series of drawings or pictures, put together in a linear, narrative sequence. Applied in an experience design context, the storyboard shows manifestations of every *touchpoint* relevant to the user and clarifies the relations between interfaces and users in creating the overall experience (Buxton 2007).

Tools for *tangible experiences* refer to prototyping activities for simulating distinct physical or interactive properties in a design situation. Their aim is to allow users to have concrete experiences with the proposed design or its functionalities while the product is still in a conceptual stage.

- *Mock Up* is typically used at the beginning of the design process. It is a visual tool that uses techniques such as photomontages or collages of existing designs, situations, products or services. Combined with contextual references and refined in an iterative process, the Mock Up prototype becomes increasingly realistic, until its visual appearance is linked to functionalities in a prototype in order to represent the overall project features.
- *Interactive Walkthroughs* are similar to role playing but are typically used at later stages of the design process in combination with a tangible or functional design proposal. Evaluators observe a product or service by going through the stages of the client journey (similar to Touchpoint Matrix). The evaluators adopt specific user roles and experience the design situation in relation to the level of knowledge and the needs these roles bring with them (Arvola & Artman 2007).
- *Rough Digital Prototyping* is a rapid tool for building prototypes. It builds on the restriction of using available (digital) objects and materials in a particular moment and location in which the prototyping is taking place. Therefore, it can be applied relatively quickly at any stage of the design process. The available material is used to simulate situational or service components in order to explain an idea to other team members and engage with them interactively. It is a visualisation tool for ideas as well as a method to ensure common ground for exchange and debate among team members. In applying everyday digital devices and finding new ways of using them as input and output devices, it contributes to an understanding of digital opportunities and makes the process of design more interactive and concrete (Barth et al. 2013).

The experiential design tools discussed here were chosen based on their flexibility as lo-tech approaches. They provide opportunities for experts as well as non-expert participants to engage with a subject and reflect on it. As structured approaches, they allow systematic explorations of indeterminate or vague situations, linking the productive nature of doing with constant deliberate reflection on the doing (Schön 1983). They work as design tools to assist with tackling the complexity (Gänshirt 2007) of experiential design while being a medium themselves in terms of how they determine both outcome and process. The prototyping tools listed above describe accessible methods of action that serve as catalysts for discourse and exchange that engage not only with professional experts but also a broader range of non-professional stakeholders. The following section discusses this focus on generating a common ground for engagement, reflection and exchange in greater detail.

3.3 Modelling as Discourse

3.3.1 Reflective Modelling

“The practitioner allows himself to experience surprise, puzzlement, or confusion in a situation which he finds uncertain or unique. He reflects on the phenomenon before him, and on the prior understandings which have been implicit in his behaviour. He carries out an experiment which serves to generate both a new understanding of the phenomena and a change in the situation” (Schön 1983, p.68)

There is a twofold perspective on the use of reflective practice within this research project, looking both at the inherent processes of design and modelling/prototyping sessions and the use of reflection while designing, as well as the use of practical elements as a valid means for developing a theoretical framework grounded in practice. Schön made the distinction between a practitioner reflecting *IN* action, which means during the actual process of doing or in his words “thinking on our feet” and reflecting *ON* action, which he described as “reflection after the encounter” (Schön 1983, p.68). This distinction serves as a mode for thought about *theories in use* through applying them both in practical design methods as well as in contextualisation of existing practice, thus building up an individual repertoire of tools for action and thought.

Reflective Repertoire

Central to a reflective thought process rooted in practice is the building of a collection of ideas, examples, actions, images or prototypes from practice. Dewey (1910) and, later, Schön described this as key to any approach of active reflection.

“When a practitioner makes sense of a situation he perceives to be unique, he sees it as something already present in his repertoire. To see this site as that one is not to subsume the first under a familiar category or rule. It is, rather, to see the unfamiliar, unique situation as both similar to and different from the familiar one, without at first being able to say similar or different with respect to what. The familiar situation functions as a precedent, or a metaphor, or... an exemplar for the unfamiliar one” (Schön 1983, p.138).

Questions such as “what if” and a playing through of the consequences— “spinning out a web of moves” (Schön 1983, p.94) —of an alternative approach introduce the act of re-framing and re-setting the problem. This shift in stance is often introduced by verbal means, for example, describing what can, might or should happen, as it easily allows the imagining of a situation from a variety of options. However, verbal articulations can be triggered and supported by visual design tools. *Collaborative sketching* (see 3.5.3), for instance, is intended to support such thinking about options and promote decision making as a procedural step leading to further implications. This is essentially a reflective process of re-framing, providing different perspectives and granularities of details and leading to new implications utilising a coherent series of sketching or prototyping actions.

Reflection as Method

One way of developing and fostering a reflective attitude in design is a consolidation of systematic action based on a repertoire of techniques and methods and their individual adaptation to the design situation at hand. A main driving force of using various methods is the designer’s initial intention to a situation. However, there are no prescriptive situations calling for specific methods. As Löwgren and Stolterman noted, methods never guarantee a usable result. They generating different results when used by different designers (Löwgren & Stolterman 2007, p.90). This is a perception of which most professional designers are aware—consciously or unconsciously. However, when working with a diversity of stakeholders with different backgrounds and approaches to problem solving, this becomes an issue for clarification⁵⁴. The application of systematic methods from a reflective design point of view becomes less a means for achieving a previously defined result but proves useful in structuring a design approach and making the outcome understandable in relation to the process. A simple evaluation of process outcomes in relation to initial objectives thus seems insufficient within a reflective process. However, this raises the questions of on what basis should reflective practice be assessed and how can the assessment process be generalised as a method itself.

Considering research and design practice in areas such as HCI design, there is a certain tradition of adopting qualitative as well as quantitative methods and processes from ethnographic research. Liz Sanders and others have shown how, especially in terms of usability aspects, correspondent techniques have been transferred to test the appropriateness of an interface or product within an intended situation or general scenario (Sanders 2006; Väänänen-Vainio-Mattila et al. 2008). Usability testing is often described as an engineering approach to evaluate design outcomes (Sharp et

⁵⁴ For an example, see the phonogram platform/piazza idea developed during the collaborative workshop in Section 3.5.3.

al. 2007, p.91). It is very much based on empirical information, focusing on quantification and measurement of diverse aspects of usage of and interaction with a given object. The Nielsen Norman Group, for instance, use, among other methods, heuristic evaluation as a method for “quick, cheap and easy evaluation of a user interface design” (Nielsen Norman Group 2013). Usability engineering in this sense can be seen as a contrasting model to the more or less uncontrollable activity cycles in design processes. In its preference for generalisation and quantification, there is less focus on individual use situations than on general product or use criteria. However, contextual inquiry as suggested by Zeisel (2006) or Hendersen & Kyng (1991) has been demonstrated as central to informing the design process.

There are suggestions for the reflective design process to apply both methodologies and use context-aware, qualitative methods of inquiry such as observations or focus groups specifically at an early project stage, while turning to quantitative assessment at later stages. However, depending on who is doing the empirical assessment and quantitative research, there is often a gap in the feedback loop to the designer, as empirical evaluation studies are most commonly done by separate research bodies. The fact that a designer is always interpreting the outcomes of empirical research renders results less objective in a design context compared to engineering. Open or inclusive design and innovation strategies have addressed this issue in the recent past (Hippel 2006); (Management Innovation Exchange 2012)⁵⁵. These approaches often follow a principle Henderson and Kyng described as “continuing-design-in-use-evaluation” (Henderson & Kyng 1991, p.91). In a grassroots design context, this form of evaluation is open to changes from all users, facilitating early dissemination and testing “in action” as well as an open attitude toward feedback and change. The user herself—as opposed to the usability or design expert—becomes the evaluator and, as such, the facilitator of change (see Brand 1995). This can be seen as a participatory approach to evaluation, which essentially builds on co-creative design strategies, as discussed earlier (see also Section 2.3.3 on understanding contextual situations).

Considering modes of evaluation in design situations, an important component is a basic openness to critique and an appreciation of its constructive value in the creative process. Critique is a form of contextualising the existing object or artefact and pointing out analogies and references for further development. It often involves highly subjective remarks on a situation. By doing so, it allows unexpected, unintended or even unforeseen perspectives to be brought to the discussion, raising questions and even clarifying situations although it might be far from providing empirical proof. In a creative environment such as a design workshop with diverse stakeholders, for instance, a

⁵⁵ Institutions such as the Smart Customization Group at MIT or the Institute for Technology and Innovation Management at RWTH Aachen are highly active in this field. <http://tim.rwth-aachen.de>

culture of critique is also about open access to the knowledge generated through acts of critique. The diverse perspectives through which critique is expressed illustrate and maintain links to related disciplines and professional practices (Löwgren & Stolterman 2007, p.96). A culture of critique thus provides opportunities for reflective thinking to re-frame the situation (Schön 1983) for further action.

3.3.2 Cooperative Model-Making

Dialogue and Negotiation

In Rittel's widely accepted understanding of design as commonly dealing with "wicked problems" (i.e., problems that withstand a linear approach to problem solving through definition, synthesis or evaluation) negotiation is a central element (Rittel & Webber 1973; Rittel 1988). On one hand, the designer finds herself continuously weighing options for actions and their consequences. Her "reasoning appears as a process of argumentation" (Rittel 1988, p.3). On the other hand, actions take place in a social context. Design problems often involve a variety of stakeholders, frequently taking different if not contradictory positions toward a situation. Often, these positions are not right or wrong but simply "more or less sense-making arguments" (Löwgren & Stolterman 2007, p.93). In the pursuit of developing tools for making the design process more transparent in its distribution of advantages and disadvantages and for carving out the negotiations underlying a design decision, methods have been developed to document the conversational process and argumentation, for instance, Dialogue Mapping (Conklin 2005), based on Rittel's IBIS notation system⁵⁶ for documenting argumentation.

Conversation and Roles

Rittel's and Conklin's systemic approaches to design argumentation seek to make design processes transparent and democratic by addressing stakeholders and designers at an eye-to-eye level. However, the diverse roles involved in conversational design processes are an important element of understanding how negotiations and decisions take form. These roles may include professional aspects of expertise and knowledge as well as conversational roles emerging in a cooperative design discussion.

⁵⁶ IBIS notation system describes a "Issue-Based Information System" developed by Horst Rittel and Werner Kunz. It is a graph-based system "meant to support coordination and planning of political decision processes. IBIS guides the identification, structuring, and settling of issues raised by problem-solving groups, and provides information pertinent to the discourse..." (Kunz & Rittel 1970)

Janet McDonnell studied several design conversations between professional architects and clients (McDonnell 2009) and found that these roles are an important element of dealing with *messy* design situations. Applying the concept of conversational threads to a macro-level-structure of client meetings, as well as on the micro-structures of specific episodes of the conversation, her analysis indicates that recognition of the expertise of others helps participants engage in the process. These roles assert certain professional authority where appropriate. However, depending on the subject of discussion, they can be a case of continuous negotiation themselves. Roles in these conversations are not understood as inherent to an individual but rather as assumed. Just as positions, roles and contributions can shift during a conversation, the assertion of roles is “a consensual act without implying power inequality” (McDonnell 2009, p.49). This process can also be observed in “designerly conversations” taking place during the reflective multi-stakeholder workshop described in Section 3.5.3. Although both the exchange between participants of the Aarhus workshop as well as the conversations observed by McDonnell do not claim to be of a participatory nature, it should be noted that they create a form of “shared ownership of the design” (McDonnell 2009, p.35) and lead to an engaging process through collaborative negotiation and collective agreement.

Strategies of Cooperation

As seen earlier with Löwgren and Stolterman, intention is a main driver for the application of a methods-oriented approach to design (Löwgren & Stolterman 2007, p.90). However, a consistent design method does not guarantee a consistent or even usable outcome since the process of reflection in design is always related to individual repertoires and understandings. The nature of task-oriented design collaborations is to generate appropriate and serviceable outcomes. By nature, this also involves design decisions providing solutions that do not please everyone involved. What the collaborative approach should produce, however, are decisions. Each stakeholder can understand the reasons for these decisions and justify them from their own perspective frame.

A characteristic of (cooperative) design language is the constant activity of the spinning of a “web of moves” (Schön 1983, p.94). This means that articulations on design depend on a certain vagueness expressed by a perpetual shift in stance in regard to what *can*, *might* or *should* be done. Design language, especially in cooperative environments, is characterised by “sketchy talk” to promote engagement in and accessibility of ideation processes (Glock 2009). McDonnell specifically looked at the ways in which vagueness, hesitation and delay as intentional elements of collaborative exchange have positive effects on purpose-oriented design conversations:

“(T)he ways in which lo-fidelity prototypes promote user engagement in interaction design - in contrast to the affordances of hi-fidelity prototypes - is so well understood that it has become an established practice in interaction design processes that engage users. The lo-fi ones communicate suggestions which are fluid and open to revision, whereas the hi-fi ones have a specificity that can be interpreted as frozen”⁵⁷ (McDonnell 2010).

McDonnell correlated the kind and quality of representation used in collaborative conversations with their meanings within the collective decision-making process. She put emphasis on a three-fold way of using design communication: firstly, as conceptual form of (quick) representation, used as a means to convey sketchy fluidity; secondly, as a contrasting, highly directive and actually non-negotiable level of spoken dialogue; and thirdly, design communication used in the current occurrence of the design situation (the plan), where representation is highly concrete but open for revision through oscillation between sketchy (visual) and directive (lingual) discussion. In addition, based on an understanding of roles in cooperation processes, McDonnell highlights the mechanisms of hesitation and delay as powerful strategic tools to add momentum to a collaborative situation. In her view, hesitation is a way of shaping one's own role in a discussion. It provides expert suggestions while simultaneously rendering them tentative and open to negotiation. It is a way of seemingly offering a broad spectrum of options while actually enforcing responsibility among co-operators.

Listening, presenting arguments, adopting certain positions and abandoning others are continuous activities in any discursive design approach. This is especially true for the non-linear course of action characterising expert design. It allows an initial broad exploratory phase before focusing on an in-depth study of one or more different paths. Parallel lines of enquiry are often sustained at the same time, very much in the sense of the Schönian “messiness” of the design problem and its accompanying discussion and testing. In such situations, it is helpful to take time and defer decisions in order to maintain a longer open-ended process phase. As long as these lines of enquiry are kept up and the discussion does not deliberately and endlessly change the defined design intentions, this is a highly appropriate strategy to cope with uncertainty or potentially gridlocked design discussions.

Coordinating creative collaboration

The described strategies of design argumentation in a dialogical environment evolve from a general understanding of design as a cooperative, procedural endeavour.

⁵⁷ McDonnell is referencing Rettig [1994] for a summary of arguments supporting this statement.

Methods of documenting negotiation and conversational threads in design discussion are employed less in response to a certain predefined, specified objective and more as a structured way of discovering the actual objective of the design. A methodological approach is, in this sense, seen not only as coordinating the creative process but also as fundamentally enabling a creative mindfulness (Findeli 2001), based on imagination and reflection and the see-sawing between openness and specification (see also Carroll 2000). In *Make Use*, Carroll argued that managing complex processes can no longer be a matter of controlled action. Instead, managing complexity means finding ways of sharing a common vision among all collaborators as the vision evolves (Carroll 2000, p.8). This is even more relevant in today's open, collaborative approaches to design and innovation, which are often marked by continuity and adaptation rather than predefined outcomes. Thackara spoke of a "design of flows" as a shift from an understanding of design as a project to design as a service structure (Thackara 2005, p.223). A service is in itself a non-linear, multidimensional construct, entailing a range of diverse *touch points* of physical, spatial, virtual and informational manifestations presenting themselves to a user. Reflecting the diversity of users and their needs, wishes and circumstances, a service system can provide a more flexible answer to the question of continuous adaptability. In this light, methods of coordination and creative innovation in collaborative teams should have a focus on their applicability in a flexible, system-based, design environment rather than being tailored to specific projects or products.

The practical reflections complementing this chapter (see 3.5) propose activities reflecting this service perspective in contextualising built environments, interaction modes and usage dynamics employing an experience design method approach.

3.3.3 Situated Modelling

Model-making and prototyping are activities that go beyond mere proof of concept. Apart from affording "predictive reasoning", model-making is also a procedural tool for intuitive design activity. Especially in collaborative design situations, it can steer the thinking and design process. In fact, "the optimum might be of less interest than the process of arriving there" (Kilian 2008, p.213).

As such, prototyping becomes part of a conversational process. It materialises design arguments, for instance, in the form of sketches, drawings and mock-ups and helps establish a design process of constructive proposition and negotiation. For Schön (1987), the language of design thus consists of the parallel activities of sketching and talking. Through the combination of verbal and visual elements, design language al-

lows constant analysis, framing and re-framing of a given problem or situation. Such a conversation is a reflective procedure based on the various “materials” of the situation. Schön described this as “spatial-action language”. Drawing from a repertoire of language clusters and “normative design domains”, this design language enables collaborators to refer to a variety of real-world implications such as formal elements, spatial dependencies, structural and technological requirements, and cost factors. Applying this spatial-action language, “[each] move is a local experiment which contributes to the global experiment of re-framing the situation” (Schön 1983, p.94). The designer’s attention oscillates between the *whole* and the *unit*, the global and the local. In this understanding, each sketch or prototype traces a “web of moves” to work toward a narrowed down (or opened up) design iteration.

This conversational procedure, as it evolves through different discussions, iterations and stages, can be seen as a process of modelling, that in itself is an experience in the way it includes object, self, others and context (McCarthy & Wright 2004). In relation to spatial experiences of artworks, for Olafur Eliasson specifically, the interaction with others co-produces space, which is, in turn, a co-producer of interaction (Eliasson 2008). To Eliasson, artworks themselves, which are usually conceived of as the result of a creative process, are actually experimental setups, activated and constituted by users. In this view, the model is not merely a representation or an interim state on the way to a final *real* solution; it can instead be experienced itself, as it is *reality*. Thus, reality becomes a conglomeration of models, and models become co-producers of reality. His concept of creating “a model of a situation” through artwork encompasses a variety of characteristics, from analogue, physical and digital models to models of engagement, perception and reflection. Following this concept also avoids a general notion that is often associated with the digitalisation of tools, especially in spatially related design practice: the fear that model-making does not capture the sensual experience of material and space, and the apprehension that the designer becomes detached from an experience of directness, which allows for instant manipulation of the model at any stage of its creation (Gänshirt 2007, p.158).

Building on the notion of design as an action-oriented language for iterative advancements and situations of collaborative discourse, the following section further investigates reflective design activities as experiential processes. In drawing parallels to learning theory, the potential significance of experiential discourse for sustained community activation is discussed as a basis for practical experimentation.

3.4 Experiential Learning

Looking at the cognitive processes of learning, educational theorist David A. Kolb developed a circular model of learning and defined separate learning styles as the main modes of learning people prefer (Kolb 1983). At the heart of this model lies an understanding of learning as a process during which abstract concepts are developed by the learner to be applied and adjusted to a variety of concrete situations.

According to Kolb, the process of learning and knowledge creation is driven directly by individual experiences. In his theory, “the impetus for the development of new concepts is provided by new experiences” (McLeod 2013). His Experiential Learning Cycle consists of four stages. The *Concrete Experience* stage, which entails first-hand experience of a new or newly interpreted situation, is followed by the second stage of *Reflective Observation*, during which the new experience is observed and inconsistencies between experience and an individual's own understanding are analysed. As a result of this analysis, new ideas or re-interpretations emerge from a reflection phase, leading to *Abstract Conceptualisation* of what was experienced and observed. *Active Experimentation*, as the fourth stage, describes the application and testing of the developed concept to the world. Kolb argued that an effective learning process goes through all four stages of experiencing, reflecting, conceptualising and testing. However, while the description of the circular arrangement of these stages is highly linear, any of the stages can serve as a starting point for entering the learning cycle. Experiential learning is thus not bound to start with an experience itself; it could just as well be initiated with a conceptual hypothesis or a testing prototype.

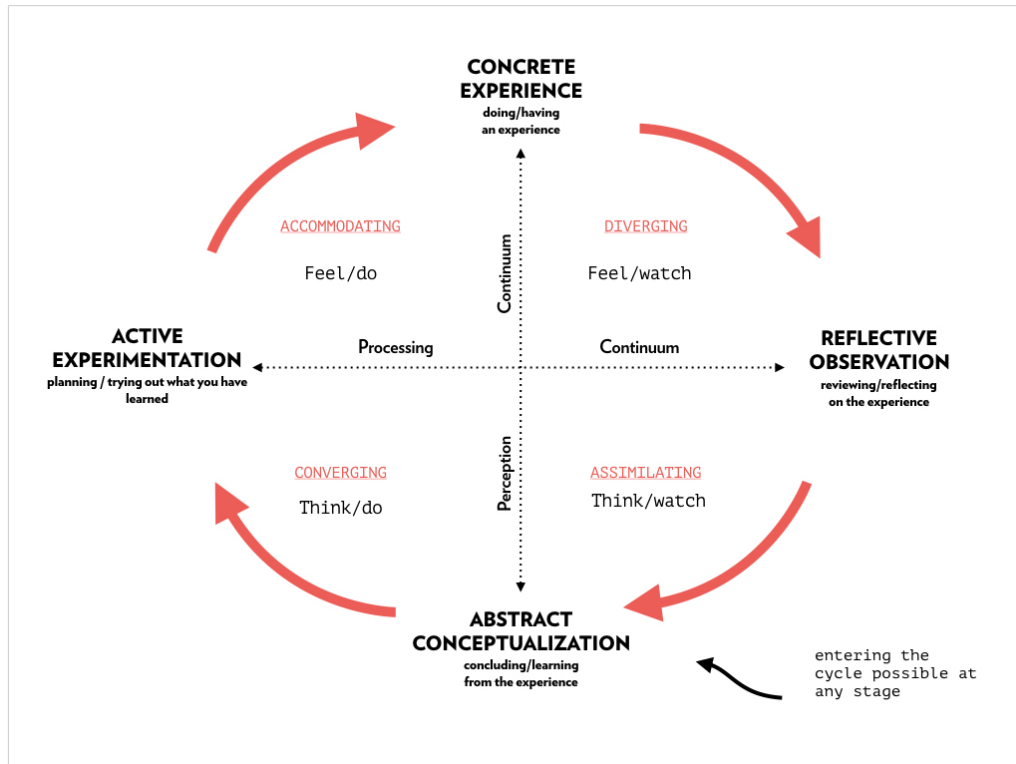


Illustration 3.2: Experiential Learning Cycle & Learning Styles. After: Kolb (1984, 1974)

Alongside this circular model, Kolb differentiated between four distinct learning styles, which he describes as *Diverging*, *Assimilating*, *Converging* and *Accommodating*. While a diverging learning style entails an open-minded imaginative approach that looks at things from different angles and is often applied in a group context, an assimilating style represents a concise, analytical and theoretically sound approach that is interested in logic rather than people. Similarly, converging learning is often favoured by problem solvers and decision makers, who like to experiment with the new and come up with solutions for practical problems. Finally, accommodating learning describes a process prevalent with most people, which is characterised by hands-on solutions and intuition rather than logic. Accommodating learners build more on the analysis of others than on their own and are attracted to new things. Kolb argued that based on educational and social background as well as cognitive structures, individuals prefer different modes of learning. These learning styles become apparent and correlate to the previously mentioned circular stages as distinct modes of processing information, each characterised by emotional responses or ways of perception. In this model, the style of “diverging” new information, for example, correlates to the process of watching and observing a new situation, but also involves emotional responses of feeling or experiencing this situation.

The way in which Kolb used these learning styles as a characterisation of typical emergent patterns to approach the new and unknown provides ground for further investigation. How do these patterns apply to multi-profession team setups and co-creative workshops to develop a shared understanding among participants with a range of backgrounds?

3.4.1 Making Sense of Experience

Although drawing from an educational perspective on learning experiences, Kolb's model bears several parallels to the process of making sense of (a technological) experience described by McCarthy and Wright (2004), (see also 2.4.4). They identified six phases in an interactive situation from which an experience develops.

The first is the *anticipating* phase, where expectations are set and established. The *connecting* phase reflects the immediate, pre-linguistic sense of a situation, before any cognitive engagement. During the *interpreting* phase, the narrative structure and action possibilities are discerned—what has happened, but also, what is likely to happen (e.g., when exploring functionalities/meanings of an interface). The *reflecting* phase makes initial judgements about an experience as it unfolds. The *appropriating* phase involves making an experience your own by relating it to personal circumstances. The *recounting* phase, after actual engagement, describes the dialogical process of describing the experience to others and yourself in order to re-evaluate it.

These phases are grouped according to their occurrence before, during and after the interactive encounter. While their model initially seems to only stretch over one stage of the Kolb learning model, namely the *Concrete Experience* of an interactive situation, there are also correlations to the cycle as a whole. Just as having an experience already involves a phase of reflection and appropriation (as with McCarthy and Wright), Kolb's model also includes a stage of reflective observation or conceptualisation and learning from the experience. Both describe a linear process by which the experience unfolds and is transformed into conscious observation, conclusions and knowledge.

Multimodal Learning

Kolb's model explicitly works with four distinct learning styles as the basic patterns through which learners tend to acquire knowledge. These styles are each characterised by central analytical, social, experimental or pragmatic procedures to approach a new situation. They are defined by the level of interest in idea generation, theoretical

and logical approaches, social interaction or hands-on solution oriented gut instinct a learner exhibits. The model builds on the suggestion that individuals can be grouped into these categories.

While Kolb does not necessarily suggest that these styles should be applied exclusively, the question remains as to whether these learning styles are bound to individuals as general preferences or whether their application depends on different modes of learning situations and the material at hand.

Recently, investigations about learning experiences have analysed the use of multimodal social semiotics and “how people use and continue to develop modes of communication in response to social and cultural demands” (Bezemer et al. 2012). Multimodality in this respect focuses on organised resources and modes of information and communication, such as images, visualisations, writing, speech and gestures as well as digital or interactive media people use to form meaning as descriptive narratives. Bezemer et al. argued that in a multimodal world, the approach to acquire competences needs to break away from conventional learning routines. “Now, when text consists of image and writing say, specific forms of textual cohesion and coherence emerge and theoretical means are needed for making sense of these” (ibid., p.13). They go on to demand a continuous assessment of social relations with an audience and an adaptation of resources and media—the modes—that are deemed useful as communication tools for a specific subject.

In this respect, this implies that a multimodal approach adapting the individual learning occasion and the backgrounds of, for example, workshop participants may provide important means to an inclusive meaning-making process.

Entering Thresholds

Looking at factors leading to high-quality learning environments across different disciplines, Meyer and Land found that a common gain from interdisciplinary learning was access to “a new and previously inaccessible way of thinking about something” (Meyer & Land 2003). Drawing from Shanahan's economic model of *opportunity costs*⁵⁸ and abstract strategic choice making, they developed the concept of *threshold* as a means to differentiate between learning that confirms an already existing mindset and learning outcomes that truly lead to “seeing things in a new way”.

58 Meyer and Land (2003, p.4), referencing Eatwell (1998, vol.3, p.719).

According to Meyer and Land, there are several characteristics of a threshold learning situation. A major aspect is its transformative quality in relation to knowledge. Once understood, it can lead to “a significant shift in the perception of a subject or part thereof” (Meyer & Land 2003, p.5). This shift is a major step, yet in retrospective, it often seems natural. Experts on a subject often have problems reconstructing the difficulties faced from their previous non-expert perspectives. The transformation thus also bears a quality of irreversibility. Regarding interdisciplinary learning situations, the concept is characterised as an integrative process that is able to expose the previously hidden interrelations of a subject from disciplinary angles and conceptual spaces bordering with thresholds in new areas.

The new knowledge acquired through such a concept at first seems alien or incoherent to previously experienced situations. It appears counter-intuitive as it does not necessarily relate to already gained experiences. This is what Perkins defined as troublesome knowledge (Perkins 1999). For him, knowledge can be troublesome for different reasons, for instance, because it is either ritual or inert knowledge based on predefined mechanical rules or abstract and passive vocabulary with seemingly no connections to the real world. It can also be troublesome because it “comes from a perspective that essentially conflicts with our own”, which Perkins called foreign or “alien knowledge”. This can happen because we have been building on *conceptually difficult knowledge*, meaning potential misinterpretations of our everyday experiences may render it difficult to connect with other concepts.

However, subjective knowledge is often formed and shared within a community of practice, such as a discipline. While there are explicit forms of information acquisition and exchange (e.g., verbal, visual) much of our knowledge remains mainly personal and implicit, as unexamined understanding or “practical consciousness” (Giddens 1984). This “tacit knowledge” (Polanyi 1974) is often difficult to grasp when we are confronted with an unfamiliar practice or conceptual space from other disciplines. But even if information exchange is happening explicitly through visual or verbal language, “meaning itself is never determinate” (Land & Bayne 1999). Similarly, Gordon Pask found that information exchange is rather based on an “(a)greement over an understanding” (Pask 1980) between participants in a conversation. This agreement is formed preferably in an iterative process of conversational “transactions *through* (not with) an appropriate interface” (Pask 1980, p.374).

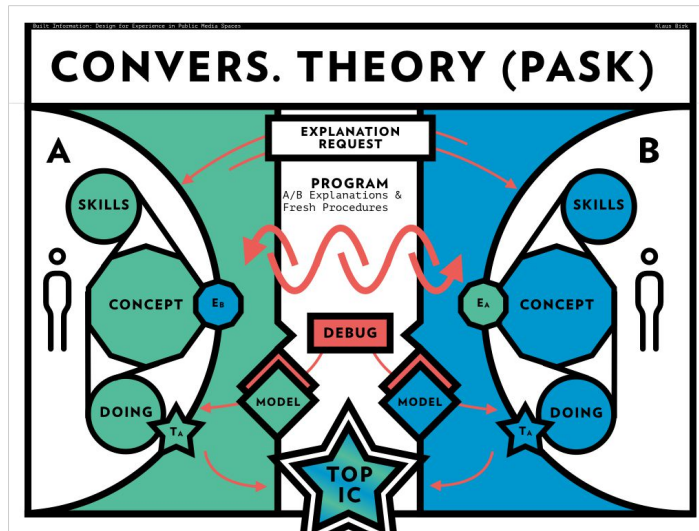


Illustration 3.3: Visual schema on Conversation Theory – Interface for exteriorising conceptual events of a conversation on a topic. After: Pask (1980, Fig.8)

Within discursive communities, for Perkins such concepts are described through systems of thought and language. To make them function, meaning needs to be negotiated and determined for a given word or symbol. This, however, can always only be a temporary assertion. Knowledge can thus be troublesome because it is acquired through *troublesome language* (Perkins 1999). Referring to conversation as systemic process, Pask more generally described procedures of debugging, modelling and executing as essential for externalising individual “concepts” in a conversation. This debugging is taking place by shared modelling and “teaching-back” effects. These are generated both via verbal criteria as well as through distinct working models leading to the agreement of a common concept and understanding of a topic (Pask 1980).

3.4.2 Self-direction and Engagement

These thoughts suggest that for successful learning experiences to take place, one needs to create an environment hosting a broad range of possibilities to engage with a subject and make interconnections between provided material and the outcomes of others and one’s own findings or results.

Ideally, the experience unfolds through a process of continuous, self-directed engagement with a subject. Self-direction in learning is, of course, not something to be taken for granted. However, it is the key to real inclusion, as it helps participants/learners take responsibility for their way to tackle a problem. It leads to a sense of ownership of the methods and processes provided and the results emerging from specific approaches. Especially with the use of digital media and information sharing, bottom-up

means of communication and participation have led to a new sense of media ownership. The availability of digital channels to learners provides great sources of multimodal information and exchange. A new sense of participation and sharing in digital media today is reflected in a variety of participatory platforms on urban matters⁵⁹.

However, many of these ventures remain virtual or detached from immediate architectural planning processes. They seem to be able to deal with the unwanted consequences of someone's previous planning decisions in that they enable a form of sharing and a "reporting system" for problems, misuse or neglect. This is a first step in taking action.

Owning as Capacity Building

When looking at digital media and contemporary discussions around copyright, digital rights management and cloud-based services, the idea of ownership in urban media does not seem to be a future-bound concept.

The rise of the recent *sharing economy*⁶⁰ has been fuelled by digital platforms and mobile devices allowing the smart rental of devices and use of services that are continuously transforming the way our cities work. Car and bike sharing, peer-to-peer-lending, house-swapping, and community-based recommendations to the best restaurant are available at your fingertips. On one hand, ownership can be understood as a concept meaning proprietorship. On the other hand, a sense of ownership also bears the meaning of taking responsibility or stewardship. Especially with the above-mentioned tendencies of information sharing, this aspect can also be traced in emerging digital platforms and communities that provide a fresh take on citizen engagement and inclusion of local communities in political or urban decision making⁶¹.

As de Lange and Waal noted, two kinds of citizen inclusion usually take place in urban development: the top-down participatory approach that lets people be part of decision-making processes, and the bottom-up community concept that provides a platform for individual demands to be heard. They point out, however, that both forms of inclusion can be problematic, as top-down, for instance, often tends to serve only as a form of "pseudo-participation" without real effects on the actual decision-making process. The Institute for the Future, for instance, called participatory processes in governmental or planning decisions an "offloading of (...) responsibilities" (Lange & Waal 2013). However, the bottom-up direction can also lead to problems in an urban

59 The Citizen Media Project at KHM Cologne's lab3 (2006-2009) was an early precursor to user-centric urban media. A popular platform today is www.fixmystreet.com.

60 For a detailed description of the term and the cultural and economic implications it describes, see Aigrain and Aigrain (2012).

61 See, for instance, participatory platforms such as www.change.org for campaigning and petitions on local issues.

context. While such an approach usually fosters community and togetherness and is rooted in physical proximity such as a small town or block, at the same time, city dwellers often want to escape or even seek to reject the parochialism associated with small-town communities. Urban citizens often estimate the anonymity of the city and are united in the strong need for freedom to live their own lifestyles. However, again, digital media may be able to provide a way to escape this dilemma of continuous individual search for consensus and instead allow for management of differences (Lange & Waal 2013, p.4).

An environment for modelling for ownership must thus take into account this diversity of interest groups and provide appropriate methods to make their voices heard. However, this needs to go further. Digital media allow for a multitude of community-based as well as distinct personal interests to be reflected in an urban environment. Ownership and responsibility depend on this diversity, as diversity is at the heart of creative, successful and motivational learning (Meyer & Land 2003). The differences brought together in a modelling environment need to be used to cross demarcation lines between disciplines, languages and knowledge levels.

In such an endeavour, it is easy to end up in a maze of debate and discourse, which can be seen in many participatory approaches to urban design processes. However, as described earlier, the establishment of a common vision and flexible organisational structures⁶² as well as the use of multimodal, prototype-oriented designerly language in generative design research (Sleeswijk Visser et al. 2005) may provide the two-way benefit of sustainable engagement with communities as well as policy makers.

3.4.3 Summary

In drawing parallels to learning theory, this section outlined experiential learning concepts and significant parallels to understanding design as an action-oriented conversational process.

Building on the pragmatist notion of learning as experience, Kolb's (1983) Experiential Learning Cycle was described as a four-stage process of experiencing, observing, conceptualising and experimenting. While there is no fixed entry point to this radial concept, it is essentially a linear process integrating cognitive processes of intuition and logic as well as emotional responses from feeling or experiencing situations. Mc-

⁶² See Wilson et al. (2000) for an account of multidisciplinary teamwork in healthcare.

Carthy and Wright's six phases of experience in interactive situations (see 2.4.4) correspond to this concept, describing phases of conscious observation, reflection, appropriation and knowledge generation.

These conceptual phases are not bound to specific information sources. According to Bezemer et al. (2012), a multimodal world also requires the integration of a range of modes for information and communication in order to acquire and disseminate knowledge in a meaning-making process. Similar to how multimodality uses a range of media to allow for a coherent understanding of a situation or subject, interdisciplinary learning environments develop access to new and previously inaccessible perspectives and interrelations. Meyer and Land's (2003) threshold concept takes this into account. It differentiates between learning confirming an already existing mindset and learning that led to a significant shift in perception. Interdisciplinary teams create integrative situations of threshold learning, confronting individuals with counter-intuitive, troublesome knowledge (Perkins 1999). It becomes conceptually familiar knowledge through conversational transactions (see Illustration 3.3).

A key for any learning experience to unfold by making thematic or interdisciplinary connections is self-directed engagement. The concept of ownership (Lange & Waal 2013) is seen here as a potential aim of creating inclusive, bottom-up approaches to citizen exchange and conversational learning.

In this sense, the notion of experiential learning provides a promising perspective for the conception of Media Architecture. Can a conceptual model for designerly action and exchange create a Media Architecture experience that goes beyond participatory solutions? Can experiential learning concepts provide the blueprint for creating self-directed engagement and ownership in Media Architecture projects?

3.5 Reflections through Design Practice

The central theme of Chapter 3 is an investigation into design as a process of materialising discourse and exchange. Based on the notion of Media Architecture as a shared experience for urban participation, this chapter so far has reviewed the methodologies of designerly practice, notably the use of creative tools and prototyping methods as a design *language* for reflection, cooperation and discourse. This perspective on design as a kind of conversational, reflective practice encouraged a review of literature in experiential learning theory and the use of multimodal *talking* and *making* when establishing situations of engaged participation. The concept of thresholds and troublesome knowledge formulated in learning theory affords an opportunity to relate to multi-stakeholder environments and the facilitation of ownership through design reflection. Corresponding to the idea of bi-directional reflection through talking and making, the following section transfers these conceptual perspectives to practical exploration.

3.5.1 Methods of Reflection

This section engages in practical reflection on design for discourse and the application of experiential learning concepts in design processes for Media Architecture. The following is an account of the research tools applied. They span the prototyping categories described in Section 3.2.2 for applying verbal, visual, spatial and sequential tools.

Visualisation and Prototyping Strategies

As another element of action research, exploratory design methods can be used to gain insight into the possibilities of analogue and digital tools for mediating space in a visually perceptible form. These explorations are set up along three major directives: ideation sourcing (the context), representation (the visual) and collaboration (the user/usage).

Visual ideation methods are used as creative tools for generating accessible narratives and mock-ups (see Section 3.2.2). Using these in a collaborative setting, quick sketches and visual elaborations become additional generators for debate and reflection on external perspectives or knowledge thresholds (see Sections 3.3 and 3.4.1). Technical prototyping tools include investigations into applying real-time sensor data, projection and projection mapping techniques, and technical methods

for eliciting interaction with responsive spatial interfaces using sensor prototyping and visual tracking. The technical explorations are conducted using prototyping toolkits such as vvvv and elements of the *prototyping interfaces* library⁶³.

These methods are used as an approach intended to lead to a set of applicable modular methods and tools addressing strategies of collaboration and creative model-making for dialogue and exchange. They reference aspects of design methods as a language, enabling processes of multimodal learning about various stakeholder perspectives, and provide options for building capacities in self-directed engagement (see 3.4.2).

Workshops

As part of a practice-led research strategy, design workshops are set up as part of a cyclical process to challenge and refine conceptual and practical tools for design discourse. Modular visualisation and prototyping tools developed in the exploratory stage are applied in (student/professional) workshops set up as testing grounds. The workshops introduce participants to the concept of Media Architecture and the opportunities it presents for experiencing urban space.

The workshop structure in part follows the conceptual model of a learning cycle, combining modes of concrete experience and active participation. The MAA is introduced as an initial tool for engaging with the subject of Media Architecture. Depending on the workshop setting, participants engage with a specific spatial situation within the immediate surrounding of the workshop venue. Creative tools for collaborative visualisation and prototyping are introduced as design language to promote discussions and feedback within the workshop groups. Each situation is approached within a workshop from two different perspectives, for example, by contrasting the disciplinary/experiential background of participants, the level of inclusion of an external audience or the provision of different sets of contextual research and design tools. This allows an immediate comparison of approaches and results based on the varying levels of application of the toolset. The workshops represent a central means of action and refinement in the process of this research.

Initially applied and tested within an academic workshop setting, the refined methods are progressively applied, discussed and evaluated within the professional community through conference workshops and feedback from studio co-operations.

63 The software and patch library accompanying a book on prototyping interfaces (Barth et al. 2013).

MAA Archive Version 2

During the first research stage, the MAA database was developed as a research tool to document and archive Media Architecture practice in relation to existing theoretical categorisations from literature.

The archive was conceived for querying Media Architectural practice through the use of interactive visualisations. While this first version of the archive was used as an internal tool for the researcher, a second version was designed for externalised application, for instance, in dedicated design workshops. This version has a restructured design for exploration and self-reflection, for instance, through extended tools for interactive visualisation. As such, the MAA intends to depict a practical response to multimodal learning and self-directed engagement (see Section 3.5.5). Based on the idea of design as a process of dialogue and negotiation, the externalisation of the database aims at providing a base for establishing a common descriptive language of Media Architecture among users of diverse backgrounds (see Section 3.3.2). The tagging and categorisation system as well as the descriptive information in the database is used as a repository for collaboration and design conversations.

The archive also presents the option for use as a tool for ideas (see Section 3.2.2) on an individual or mobile level. Version 2 of the database thus builds on a flexible web-framework, allowing it to be queried from a variety of mobile and desktop devices, and includes options for individual user participation.

3.5.2 Visual Prototyping

The visualisation of aggregated information is a key element in making datasets accessible and digestible. Within the context of a co-creative design concept for Media Architecture, information visualisation is applied on several levels of the design process. In reference to Kolb's Learning Cycle, it supports stages of active experience, reflection and conceptualisation (Kolb 1983).

Visual Ideation

Within several classes on visual thinking at *DHBW Ravensburg, Department of Media Design*, the author introduced visual ideation and design-thinking techniques to second-year design students. Three group sessions were conducted, each with 20 to 25 participants. These group sessions included two exercises on visual storytelling.

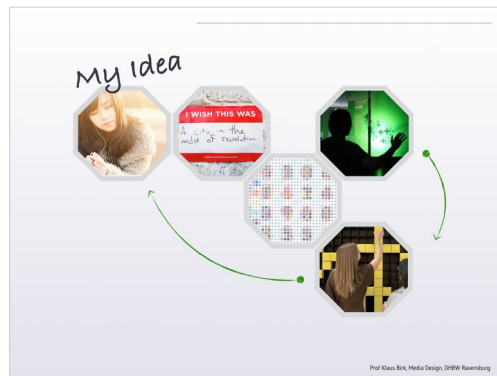


Illustration 3.4: Visual explanation during the workshops. Here: telling a story using the Ideation Card method

The first is an exercise that uses ideation cards depicting everyday situations or objects (sourced from a personal online image source). Each student is given three to five random cards and asked to develop a short image strip from these cards in response to a given problem related to spatial interaction design. All the received cards need to be used, and one card can be swapped for another where required. After 15 minutes, the students' task is to present their ideas verbally using the arranged set of ideation cards for visual support. The aim is to construct a fictive story that illustrates possible responses to the problem, however fanciful they may sound. The ideation cards function as visual triggers, but also as “excuses” for absurd yet potentially thought-provoking elements in the story.

Building on this initial exercise, students gather in groups of four to sketch their stories collaboratively on a single large-format poster. The focus lies on basic and simple drawings to encourage the participation of everyone in the group. The ideation cards are to be used directly in these sketches. However, participants can re-balance the importance of certain story elements and elaborate visually on parts of their initial story.

Sketching provides a quick, fast and economical tool for simultaneously developing and explaining ideas. Within the 30-minute sketching sessions, it is easy for a group to share individual ideas with others, as the poster literally offers a common ground for discussion even among group members that do not usually work together.

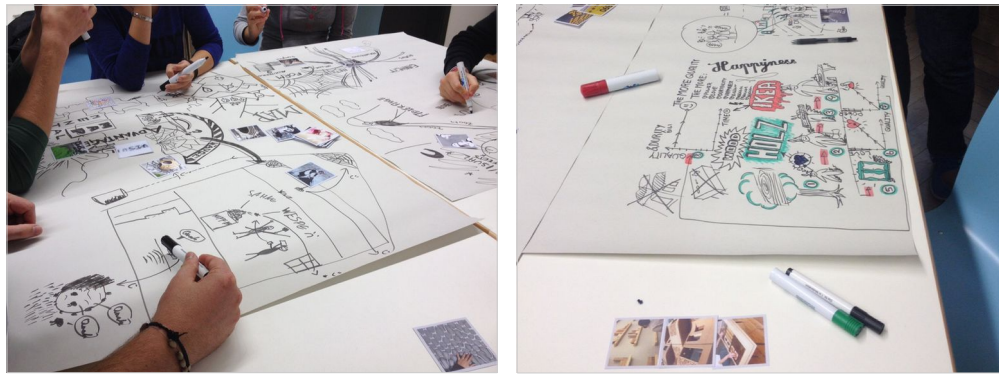


Illustration 3.5: Students engaged in a sketching session at DHBW, visualising ideas and scenarios based on individual visual prompts. © Author

After 30 minutes, the visual outcomes of the sketching sessions are presented in short walkthroughs. Two presentation procedures are applied: In the first, students present their story using their own visual sketches. Here, the focus lies on presenting individual ideas in detail and gaining an understanding of the students' contextual thinking. In the second variation, students do not present their own sketches but rather those of other members of their group. The intention is to underline both the descriptive and imaginative power of visuals for people who are not completely familiar with an individual's ideation process.

As design tools, these short exercises help participants become familiar with visual thinking and basic collaborative processes in the initial stage of the design process. These tools can be set up easily, with no entry requirements for interaction design or software expertise, and thus qualify as a potential tool for the treatment of ideas in lo-fi participatory design contexts (see also 3.2.3).

Visual Exploration

Another kind of visualisation approach has been applied on a conceptual interface design level to explore opportunities to presenting data collections interactively. Using the initial MAA Google spreadsheet database (see 2.5.4) as a source, the author used generative web-based tools for information visualisation to experiment with various forms of visual and interactive representation of the MAA data source.

Tools such as *Sheetsee.js*⁶⁴ and *RAW*⁶⁵ for data visualisation led to experiments with data representation for interactive self-exploration. Technically, these tools are frameworks and online services built on modern SVG rendering technology using the *D3 library*⁶⁶. This technology is browser and device-independent, meaning it can technically be used by literally anyone using a web browser on a mobile computer or smartphone.

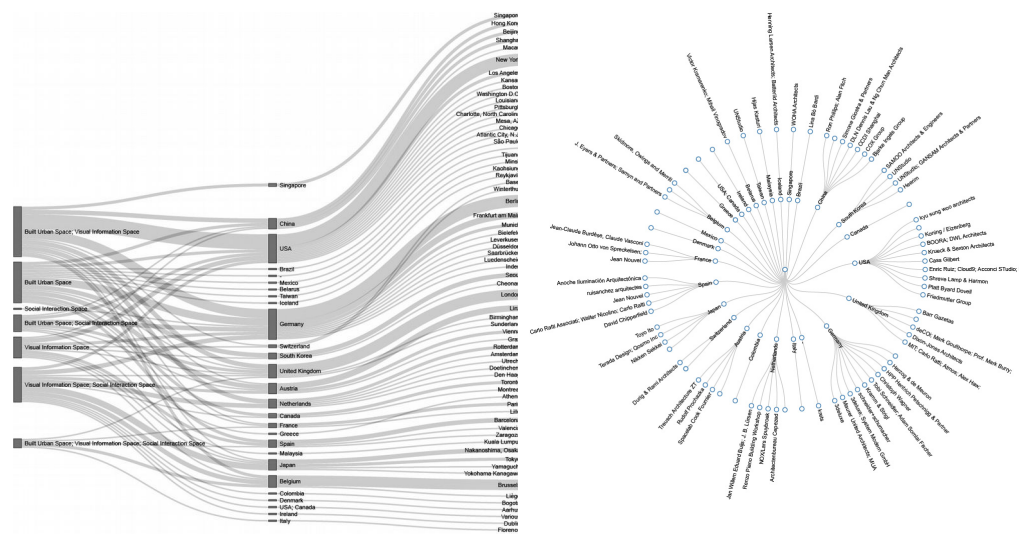


Illustration 3.7: Two exemplar visualisations of the MAA spreadsheet database based on d3, using the RAW webservice. <http://raw.densitydesign.org>

⁶⁴ Sheetsee is a client-side JavaScript library for connecting Google Spreadsheets to simple, web-based visualisations. It was developed by Jessica Lord in the course of a Code for America Fellowship. <http://lord.us/sheetsee.js/>

⁶⁵ Similarly, RAW (from 2016 on RAW Graphs) is an open-source data visualization framework developed by DensityDesign Research Lab (Politecnico di Milano) since 2013. It provides a web interface for connecting static data sources with dynamic web-based visualisation options. <http://rawgraphs.io>

⁶⁶ D3.js is a JavaScript library for data-driven manipulation of web-documents. As the core framework for the above-mentioned projects, it uses HTML, svg and CSS. D3 was developed by Mike Bostock at the Stanford Vis Group. <https://d3js.org>

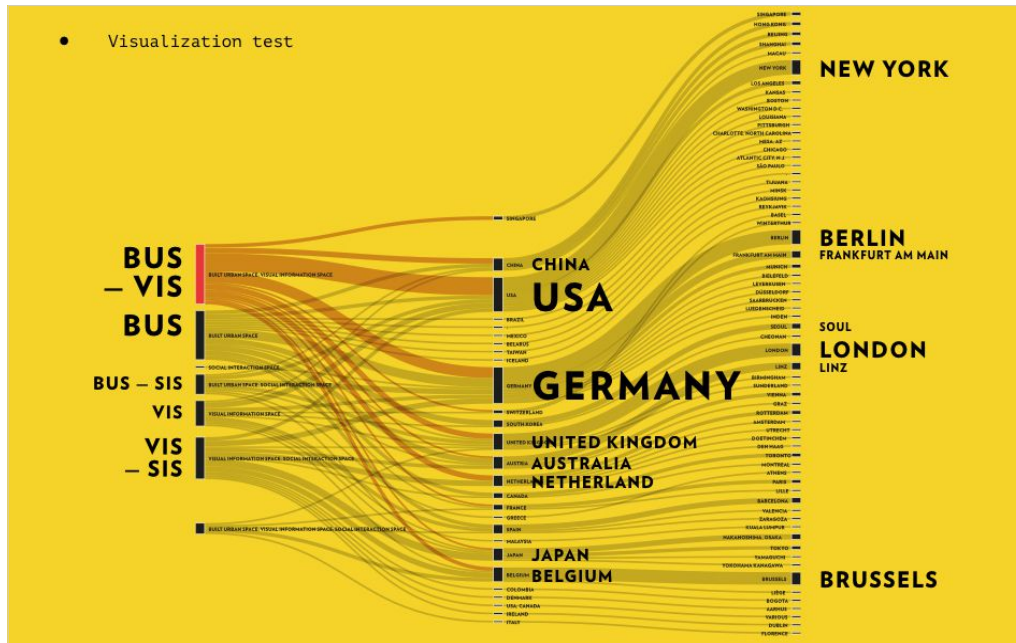


Illustration 3.6: A conceptual design mockup for a data mapping view in the MAA database

SVG visualisation with d3 allows a range of views of the dataset. Depending on the definition of coordinates and data axes, the mentioned tools allow quick, manual experimentation with a range of data mapping options and rendering views. These visual mappings can then be integrated into visual interface mock-ups for a new MAA version. Adding to existing options for chronological, geographical and thumbnail browsing in the database, a separate infographic view for visual exploration of projects and conceptual interrelations was suggested based on these experiments. The intention here is to explore options to use information design as a facilitator for self-directed engagement with the dataset. In light of integrating the research database into participatory settings, information mapping and interactive options for exploring various views of a given dataset become even more relevant as a design tool for experiential learning.

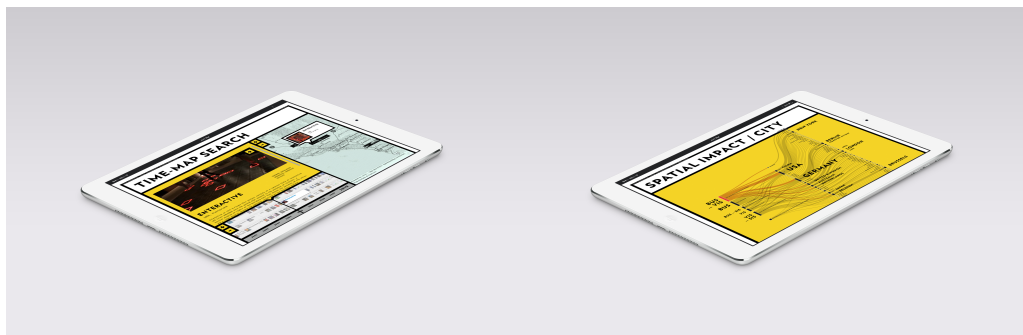
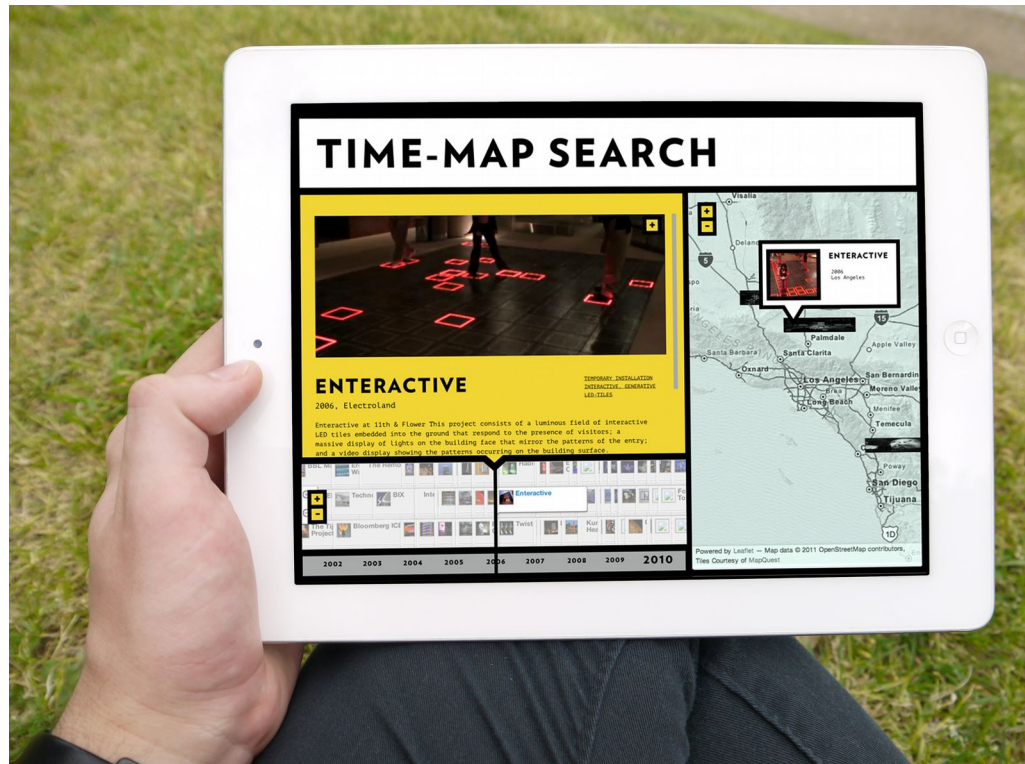


Illustration 3.8: Visual mockup screens for a mobile oriented interface for the MAA database

Visual Reflection

In addition to their use in ideation and formal exploration, visualisation strategies help structure and coordinate thinking processes. Similar to the visual thinking workshops described earlier, visual tools can be used to generate and represent cognitive structures from ideas. As described in the previous chapter (Section 2.5.3), concept sketching and formulating design schemas (Nelson & Stolterman 2002) are a useful way of generating “ordered clusters of ideas” to guide a design inquiry (See Table 5).

During the process of reviewing literature sources on design (for) discourse in this chapter, visual schemas were again applied to review conceptual theoretical models. These visualisations provided helpful visual strategies to engage with thinking from specific fields of study such as learning theory and develop transferable hypotheses for other areas of investigation such as design in a process Kolb called the phase of “abstract conceptualisation” (Kolb 1983).

These visual schemas were used as reflective tools in the conceptual planning for a discursive design procedure for Media Architecture, scaffolding the basic structures of an experiential learning process. As such, these schemas are not only visual “containers” for conceptual thinking; in addition to their representational role, their creation process also provides opportunities to elicit new thought experiments. The visual schemas themselves become “epistemic objects” (Ewenstein & Whyte 2009).

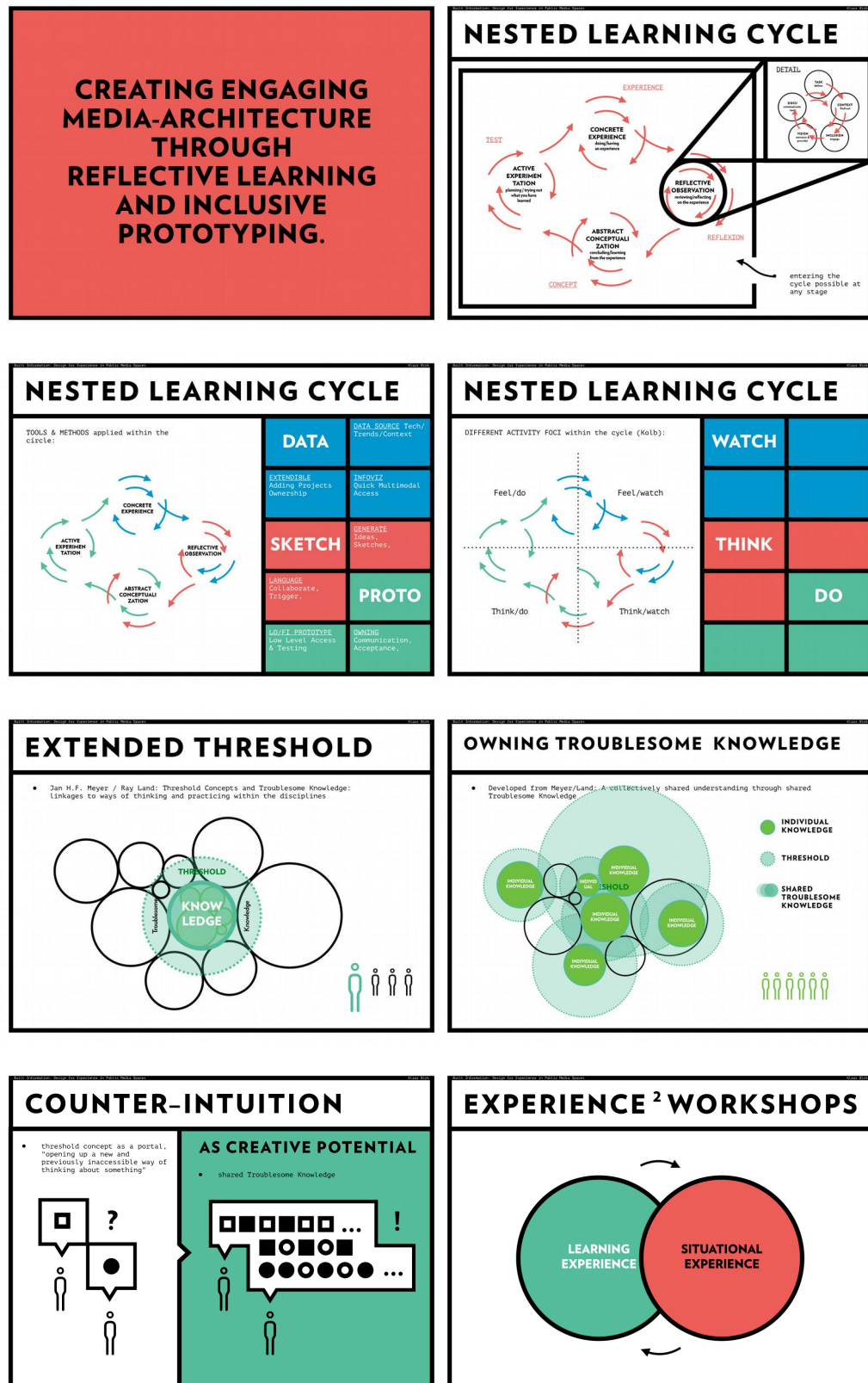


Illustration 3.9: Examples of schematic visualisations on thinking models during literature and practice research

3.5.3 Collaborative Multidisciplinary Workshop

An initial workshop setup was conceived and applied to “test the waters” and adapt design methods for ideation and lo-fi prototyping (Section 3.2) to a Media Architectural collaborative design context. In analogy to the reflection-in-action patterns identified by Schön, the following description of an initial collaborative design workshop can be used to develop a process of continuous reflection on the applied methods and their contextual relations. In a way, this can be understood as feedback between the theoretical macro-structures around the subject of modelling digital experience for Media Architecture and the micro-levels of specific practical methods of design practice/prototyping and their outcomes.

Prototyping for Ownership

The workshop described here was introduced by the author and a collaborator during an international conference on Media Architecture in 2012 that brought together architects, designers, academics and industry partners from around the globe. The conference focus was on the subject of “participation” as a central theme and a “core value of Media Architecture” (Media Architecture Biennale 2012 n.d.). Accordingly, the papers and workshops submitted to the event gave insights and discussion on subjects such as urban human-computer interaction, responsiveness and dialogue, as well as the collaborative approach needed when conceiving and planning Media Architectural projects.

Description/Motivation

The idea behind the workshop was to look at ideation and prototyping methods as tools that are valuable not only in an informational or inspirational sense. The workshop also suggested the application of these methods from a perspective of early involvement to trigger engagement. Essentially, it was suggested that this inclusive approach leads to appropriation and ownership of ideas, visualisations and functionalities on a more permanent level:

“One of the main characteristics of Media Architecture is its prominent visibility within the city. Many examples serve as visual landmarks within their individual urban settings. However, public reception tends to be ambiguous about content or reasonability of Media Architectural display. Opportunities to engage with stakeholders, locals, communities or passers-by to learn more

about their views, knowledge or experiences are rarely taken up. The workshop focuses on ideation and prototyping techniques for early involvement and activation of stakeholders. We will look at co-creative design methods and how to apply them to generate relevant content for Media Architectural applications.

The workshop structure intertwines a series of thematic inputs on experience design, participatory design research and interactive prototyping tools with a set of hands-on explorations. In small groups we will be applying the methods discussed and bring them to life using low-tech tools as well as fast vvvv prototyping. A collective review phase gives opportunity for reflection and comparison of outcomes.

The workshop is laid out as an active starting point for participants to explore inclusive design methods for prototyping architectural media scenarios. Low-tech activation as well as digital prototyping techniques are being applied. The workshop's interdisciplinary nature is also intended to initialize collaborative links between participants, beyond the actual event.”⁶⁷



Illustration 3.10: Participants of the "Prototyping for Ownership" workshop at MAB '12 in Aarhus. © Author

The workshop was set up as a full-day event and participants came from a variety of backgrounds. Among them were four professional architects and architecture students, five interactive designers and design students, two of whom were already act-

⁶⁷ This was part of the workshop description for "Prototyping for ownership", a workshop by Klaus Birk and Roman Grasy at the Media Architecture Biennale 2012 – <http://mab12.mediaarchitecture.org/workshops/>

ive in Media Architecture and urban screen projects, and four representatives of local authorities and architectural lighting manufacturers. Participants came from Denmark, Austria, the UK, Russia and South Korea.

Methods Used

The workshop structure was divided into four parts: *Framing the Subject*, *Understanding the Context & Perspectives*, *Creating the Story* and *Envisioning it*. This structure resembles the basic course of action in large design projects and phases, where mechanisms are applied to develop an understanding of clients' contextual requirements and opportunities to develop a creative and “graspable” design interpretation of the subject.

The methods applied in these four stages ranged from conceptual and low-tech sketching to environments for (assisted) digital prototyping. They were derived from human-centred design and innovation processes (see also Section 3.2.3). However, the specific adaptation and setup built on theoretical approaches to urban and site-specific media.

Framing the Subject

During the initial phase, participants were separated into two smaller groups of six to seven people. For the first task, we used the *Inspiration Card Method* (see 3.5.2). Participants were asked to identify a useful application of digital urban display in their individual home/neighbourhood. The idea was to use the visual triggers, the inspiration cards, to quickly develop a visual storyboard around the first idea. A total of 150 cards were prepared, showing imagery from six different categories: built environment, informational content, audience, interaction and response, technology and utopia. Images were sourced from online image databases⁶⁸.

Understanding the Context & Perspectives

The second phase was used as a refinement and contextual mapping phase. It built on the inspiration card approach by establishing a range of different perspectives on each story. For this stage, we developed the *Collaborative Context Sketching* method. This method combined the idea of collaborative sketching (see 3.5.2) with principles

⁶⁸ Image sources were flickr.com and pinterest.com. Where possible, the card set used pictures published under Creative Commons licencing.

of the *Thinking Hats* method (De Bono 2000), which is a playful way of taking several different roles and viewpoints on the same problem or situation and visually adding these perspectives to the sketches.

Both stages combined led to a range of potential workshop ideas to be developed further. Each group generated around five to seven ideas already embedded in a considerable number of (hypothetical) stakeholder perspectives.

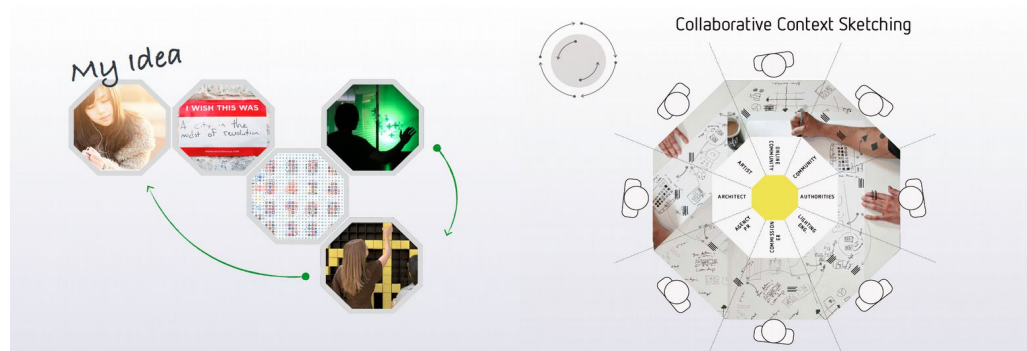


Illustration 3.11: Conceptual visual description of using the Ideation Cards in a collaborative sketching situation



Illustration 3.12: Details of collaborative sketches at various stages, based on rotational role-switching. © Author

Creating the story

Within each group, only one idea for elaboration and collective prototyping was developed further. A table-like system called the *Story Flow Map* was prepared as a quick method to generate a sequential storyboard and use-flow process for the situation. The idea of this method is to generate an initial narrative that additionally integrates several perspectives on the story and maps their interrelations. For instance, it shows adaptations for the built situation, the audience's perspectives, the content views in each stage, interactions taking place, and technologies being applied. This map was also used to leverage the diverse roles participants would take during the prototyping phase.

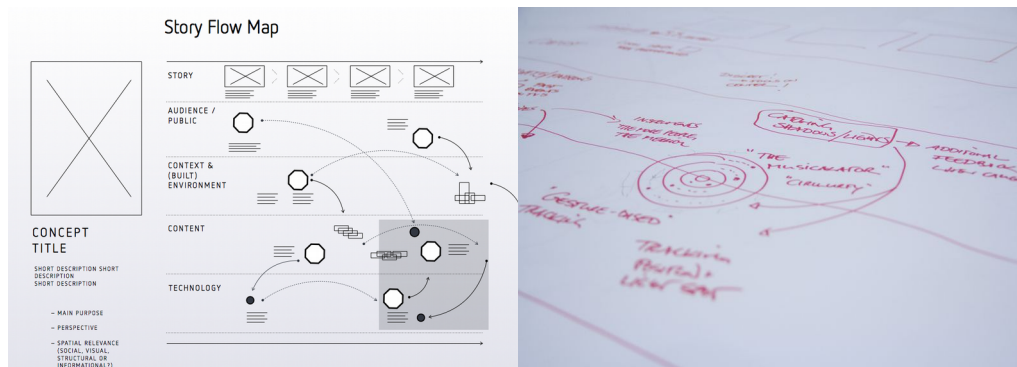


Illustration 3.13: Conceptual description of the Story Flow Map. Details of mapped results. © Author

Envisioning the story

This phase prioritised visualisation and prototyping methods to make parts of the developed concepts tangible and interactive. A range of materials for low-tech prototyping (e.g., paper, cardboard) as well as digital tools and sensory devices were available for use, such as a *Kinect* camera, an *iPad* with gesture recognition and wireless control (*TUIOpad*), prepared software scripts for graphical programming (*vvvv sketches*, for motion tracking or projection mapping) and video prototyping (*Adobe AfterEffects*, *Adobe Premiere*). Based on the Story Flow Map and according to their individual skill sets and interests, participants started working on sub-tasks by themselves or as a team of two. The two workshop hosts assisted with software and hardware support where necessary.

Outcomes

The groups developed four prototypes for two ideas. One group worked collectively on the idea of visualising a passing car's energy usage on the surrounding buildings. They developed a small-scale generic cardboard model from a moving box and used it as an object for 3D projection and animation. While a team of two worked on the paper model, the two others were supported to work with and adapt simple *vvvv* patches for visualising a generative pattern and setting up a projection mapping on the cardboard model. After adjustment, the group decided to document the situation as a video prototype to indicate a reactive façade responding to passing cars. Using a cardboard car model and wire, they animated the car within the projected-on model. The changing patterns and colours gave the impression of a reactive environment.

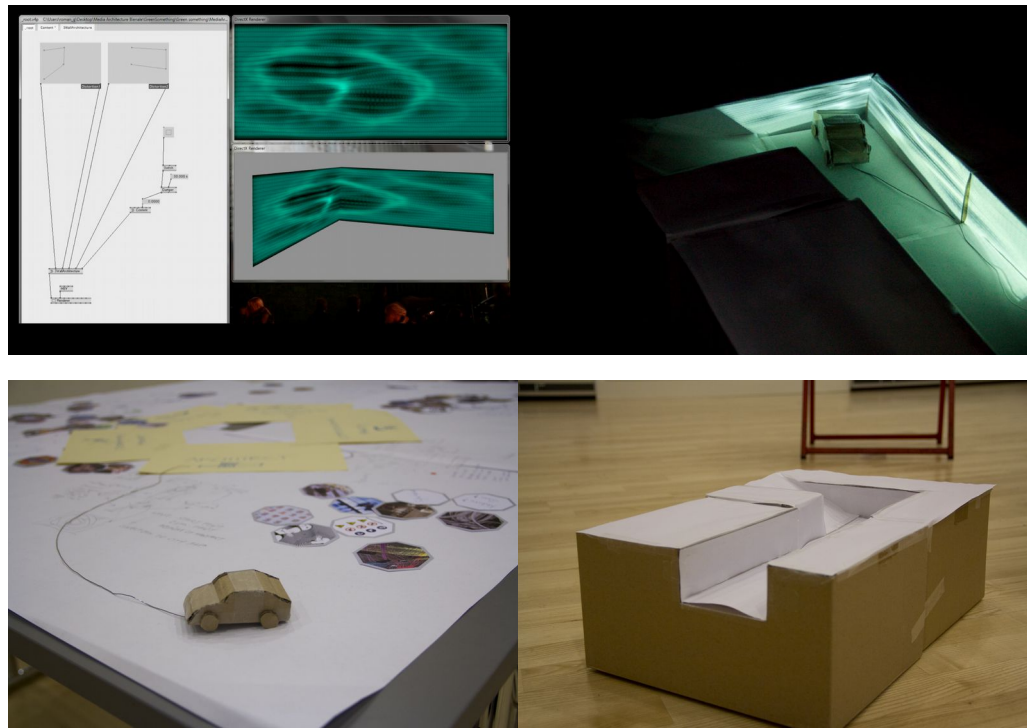


Illustration 3.14: Lo-Fi Prototyping: Projection mapping using vvvv on cardboard models. © Author.

The second group envisioned a large-scale phonogram-like installation on an urban piazza. The idea behind this was to make people engage, interact and actually “dance” with the installation while crossing or passing the square using playful audio feedback that reacts to human movement. An individual’s position on the square, walking speed and gestural movements would serve as triggers to evoke the sound of an instrument or group of instruments so people could be seamlessly integrated in a larger, everyday performance while making music together.

The complexity of the envisioned interactive functionalities led to the idea of working on several independent visual and functional prototypes, each representing one aspect of the situation. One participant began sketching a digital 3D setup of the urban square as an initial visualisation of the interactive platforms. A group of three participants agreed to film a running cycle of a person for use as a video prototype. Another participant worked on an interactive prototype using Kinect and a previously prepared vvvv blueprint sketch. The prototype was designed to sense human presence and programmed to play a music track as a simple yet intuitive reaction to this condition.

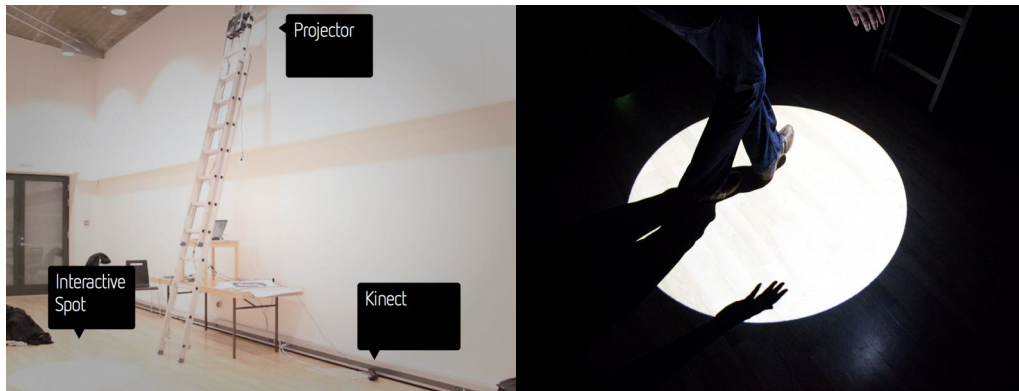


Illustration 3.15: Lo-Fi Prototyping: Kinect motion tracking using vvvv and projector. © Author.

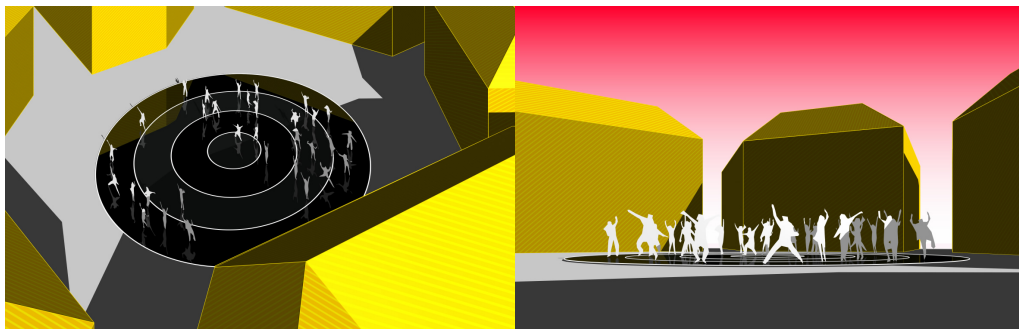


Illustration 3.16: Lo-Fi Prototyping: Visual renderings of imagined interactive plaza.

Collaboration — The workshop was set up based on a generative design research approach (Sanders 2000), although the structure was outlined quite differently. The main hypothesis was that participants would develop more interest and engagement in a participatory design through a “making it tangible” process. In contrast to a generative design research session/context mapping, no tasks were given to the participants prior to the actual workshop session. Instead, the making process developed from the collaborative shaping of ideas through the context sketches and story flow maps developed in the morning session. The importance of interactive, visual and dimensional aspects was balanced against feasibility within the remaining time frame, skills and access to resources on site. The combination of people with diverse professional backgrounds—architects, community representatives, interaction designers, lighting experts, etc.—who still shared an interest in the topic of urban media generated a wide spectrum of interesting ideas/concepts in a very short time. Separation into smaller groups was very practical and generated a sort of “competitive” situation that proved to be helpful in engaging people.



Illustration 3.17: Group discussion on individual visual stories. © Author.

Group dynamics — The workshop teams comprised participants with diverse professional backgrounds and different levels of expertise: from architects and lighting manufacturers to interaction design students, experienced practitioners and academics. During the initial ideation stage, participants were encouraged to develop and present ideas mainly from their own experience.

The participants were encouraged to act as experts based on their own urban lives. When presenting the first ideas, different “technical” expertise became apparent. For instance, one participant skilfully illustrated a central idea with a quick but detailed three-dimensional sketch while another participant came up with a set of eight or 10 ideas, explaining them all orally in an eloquent way using the ideation cards. In the later stages of developing the story flow map, other team members referred to or built upon both of these “technical skills” to drive the conversation. However, during the envisioning phase, roles and contributions changed significantly with previously dominant participants being less present or slipping into supporting roles in the “making” process.

These “designerly conversations” taking place during the workshop included the continued assertion of individual roles within the group as a “consensual act without implying power inequality” (McDonnell 2009, p.49). For instance, in almost all cases, participants had to adjust their ambition for the concept to the situation and tools

available to them. In the case of the cardboard model for the energy saving idea, the group quickly developed dynamics for working as a team and improvised when working with the same model. The phonogram group went through a series of somewhat frustrating moments/discussions after realising that the tools available to them were too limited to represent their vision and that it would have taken two to three days to work on the prototype. Two group members began dissecting the concept into smaller tasks and agreed to work individually on smaller prototypes for specific aspects such as visualisation of urban setting, interactivity and video demo. This helped the group continue the process. Although both the exchange between participants of the Aarhus workshop and the conversations observed by McDonnell are not claimed to be of a particularly collaborative or participatory nature, it should be noted that they created a form of “shared ownership of the design” (McDonnell 2009, p.35) and led to an engaging process through the collaborative negotiation and collective agreement.

Design language — Although the focus on feasibility created the risk of side-tracking initial concept ideas into something else that is just at hand and available, the resulting prototypes informed the initial collaborative concept in many ways:

- They served as a common denominator for visualisation.
- In semiotic terms, they created a tangible element for expression and further verbal/visual iteration.
- They served as either “proof of concept” or counter evidence, showing that, for example, the desired human interaction can be achieved with much simpler setups than the previously developed concepts in the story flow map.

In evaluating the prototypic outcomes from the workshop, its intention as a facilitator for early engagement through practice is an important aspect. Even though the results were able to make the idea come alive only partially, the workshops succeeded in developing a refined sense of the situation and an understanding of the consequences of providing information and participation.

The combination of both “traditional” materials for lo-fi prototyping, such as paper, cardboard and ideation cards, as well as a simple, predefined set of digital prototyping tools (i.e., sensors, interfaces, vvvv sketches) provided easy ways to articulate ideas visually while at the same time spurring ambition, especially within the architectural disciplines, to make use of unfamiliar software and digital tools. This elicited an interesting aspect that could be further explored. Lowgren and Stolterman described digital design prototyping in collaborative situations as an “asymmetric technique”. To

make use of digital prototyping, a participant needs to acquire a set of specific skills, either before the collaborative session or during exploration. Digital design prototyping in this sense forms “undemocratic material” (see Lowgren & Stolterman 2007, p.90). However, their argument appears dated in light of current tendencies⁶⁹ to view basic programming as essential to today’s networked world. Lowgren and Stolterman’s argument is based on a co-creation study from the late 1980s using “hypercard” that showed a broken or influent dialogue between co-creators “as soon as programming was called for” (Löwgren & Stolterman 2007, p.90). While these interruptive situations also appeared in our initial workshop, in several cases they seemed to encourage creative thinking and the conscious re-framing of an initially defined problem to something simpler or more to the point. Paper-based modelling techniques were often combined with one of the digital tools available. In general, this open and curious attitude toward technology resonates with recent approaches to creative hard- and software prototyping in disciplines outside the traditional scope of electronic sciences and informatics (e.g. Barth et al. 2013). The combination of both traditional lo-fi paper techniques and lo-fi software tools and electronics provides a fertile environment for playful engagement and interaction with technology-equipped Media Architectural prototypes.

Evaluation

In the workshop, no specific evaluation methods were introduced or applied. However, the workshop situation (both teams in a large room, open access to the room from other workshops) enabled a lively exchange and critique among team members as well as individuals not involved in the prototyping process. For instance, one group tested the interactive *Kinect* prototype quickly and “on the fly” by simply inviting participants from other workshops during their coffee break. The testing covered functional tests, for example, tracking within different distances and the diversity of movements around the installation. The main impact this testing had on the further elaboration of the prototype was early “behavioural” proof of concept: As people entered the reactive situation and found out they were the triggers of background sound and music, all of the five or six individuals started moving or even dancing to the beat and played with the rudimentary interaction of switching the sound on and off. These findings “enthused” participants to continue to detail work on the prototype and provided insights on possible simplicity and even banality when designing for spatial interactivity. Of course, this “assessment” of early-stage prototypes was not based on precisely “measurable” ground. However, the mechanism of on-the-fly testing or “qualitative probing” is a potential aspect for further development.

69 For instance see initiatives such as www.codecademy.com or open source projects, e.g. www.processing.org, respectively the maker scene, e.g. www.makezine.com

3.5.4 Professional Workshop at Innsbruck

The previously described workshop environment focused on prototyping methods as a tool for establishing a “common ground” for continued participation and ownership. Based on experiences gathered from this conceptual workshop, an opportunity arose to apply the concept of Media Architectural design as shared experience in a professional project.

During Summer 2013, the author was involved in the design and development of a digital signage system for the new headquarters building of the Tyrolian Chamber of Commerce in Innsbruck (Austria). The new development was an extension of an existing historic building in the city centre, housing administration offices and conference rooms for the Chamber. It was planned as a geometric cube corpus with a large façade of windows and an overlaying permeable aluminium structure for shading purposes. As the building prominently faces a long pedestrian zone, there were early plans by the architect/commissioner to fit a digital façade system to the aluminium cladding. However, this idea was set aside during the process and focus shifted toward signage and a visual communication system within the building rather than on its outer façade.

Constellation/Cooperation Setup

The WKO is the Austrian Economic Chamber, a national institution for the representation and advancement of Austrian business and industries. The WKO acts as the political voice of 450.000 businesses in Austria. It offers expert advice and links to educational institutions through its federal structure, with regional offices in each Bundesland. The WKO Tirol office planned to relocate to a new building development in Meinhardstrasse, Innsbruck, which is a highly representative location in the old city centre. The development started in June 2012, with a planned opening to the public in June 2014.

The cooperation process for this media façade project included various external and internal stakeholders. WKO Tirol's president and three directors represented the commissioning party and were supported by project and marketing management on the operational level. External stakeholders included the architect coordinating the development, lighting and digital display manufacturers and an information design studio planning the building's signage system⁷⁰. Additionally, indirect political figures such as the mayor of Innsbruck and WKO Tirol member firms were involved in the decision-making process through discussions and presentations.

⁷⁰ Partners included: Vogl-Fernheim Architects, lighting experts Zumtobel Manufacturing, Bion-Tec, Eyevis and local information design

Process

Mariacher Information Design served as the design office responsible for the signage system of the building. The author and his DHBW colleague, Prof. Herbert Moser, were asked to be involved as external advisers, initially for the integration of scenographic media into a potential wayfinding system. While working on the signage project, the idea of a façade display resurfaced. Although there was no explicit demand or brief from the commissioner to include a media façade into the design concept, the stakeholders suggested initial concept sketches that use the façade as a highly visible extension of the interior signage system. Based around the central theme of a square (as in the WKO brand system) and cubes (the signage system uses three-dimensional pixels or cubes as modular elements), visual ideas emerged from discussions and were documented as rough sketches.

The focus was on a visual connection between the exterior surface and a planned media installation in the 27-meter hallway providing access to the building from the main entrance. At this point, there was only a vague description of expectations about the outer media façade and no particular brief from the commissioner. There had been earlier discussions with lighting manufactures about technical options for media integration in the façade. However, no decisions had been made, and the subject did not seem relevant at this point. Both the author and his colleague have professional experience in spatial and interaction design so it was a deliberate and economic decision to set up an ideation phase largely autonomous and unrelated to potential expectations by the building commissioner or architect. The aim was to define basic directions—a design hypothesis—to ignite the decision-making process about the media façade, and then, as a second step, to apply a context-aware participatory process for content development and production.

Quick hand-drawn sketches were used to document and communicate this initial ideation session. Ideas involved the visual appearance and conceptually interfaced the usage of way finding with external communication or technical details. As the aluminium shading tiles for the façade were commissioned prior to our involvement, it became clear that a digital display solution had to take into account several constraints related to LED size, pitch and potential fixture options. Potential LED grid systems and manufacturers were quickly identified and preselected based on light emission attributes and size. In parallel, a process of visual design exploration looked at mainly graphical options of integrating an LED grid pattern into the building volume itself and adapting it to architectural attributes of neighbouring buildings.

The theme of the square shape reappeared and was re-interpreted as a way of “zoning” the façade display into playfully overlaid areas of rectangular grids with varying pixel density. The idea was to use this principle to allow for areas on the façade as “high-resolution” zones while at the same time avoiding the visual appearance of an outdoor display screen attached to a building surface. As a welcome side effect, this approach led to more economic use of LEDs on the large façade area. A long distance visual impact could be achieved while at the same time avoiding a costly large-scale high-resolution grid over the whole façade.

Exchange/Feedback

The process at this stage was largely unrelated to thoughts about content or content curation from the commissioning party. In earlier discussions, the commissioner expressed a vague initial wish to use the façade as a “public viewing screen” for sporting events. While providing high visibility, the immediate surroundings, with an underground parking-lot entrance across from the building, did not seem suitable for such a scenario. Neither seemed the related costs appropriate for such a rare use. Therefore, we decided to ignore it. However, while working on the visual explorations, ideas about including the public in curation processes of the building continued to arise.

In a second meeting about façade development, the starting point for discussion was set around technical options for the digital media façade. Based on our research and the given structure of the planned aluminium cladding, we were initially asked to present potential technical options for LED lighting elements. Based on our evaluation, we provided visual and dynamic mock-ups of the recommended solution by showing the potential visual appearance and output capacity through Photoshop imagery and a processing prototype for video integration.

The presentation of visualisation options provided graspable results and sparked discussion among meeting participants around the potential “effects” and resulting visual appearance of the building. However, these effects were mainly referred to from a technical perspective, with questions about resolution, luminosity and pixel pitch. Technical options and related budget criteria were at the centre of the discussion although a communication strategy (the basis for the definition of technical/budget-related media requirements) had not yet been defined.

Although the feedback discussion initially focused mainly on technical details and options, there were clear signs of accessibility for “bold” and representative ideas among members of the commissioning party. In fact, the aspect of screen resolution seemed to be driven by a need to underpin a prestigious plan with the utmost (technical) flexibility.

Outcomes

During the discussion in this second meeting, various argumentation lines were apparent. The commissioners' perspective followed clear extrinsic motivations, as outlined below.

- **WKO member/partner-integration:** The dynamic façade should allow for its use as a representative platform. High visibility in the city centre and options to advertise business expertise is thought to attract a broad range of WKO members.
- **Public multi-purpose:** The façade should provide space for optional usage during public events (e.g., football games, public viewing).
- **Re-funding:** The basic plan was to re-finance the costs of the LED façade on the building through advertising display.
- **Technical specifications:** To provide a space as flexible as possible for a variety of media and usage scenarios, the commissioning party focused on technical lighting options with high resolution and luminosity. At the same time, this potential hi-resolution approach should still be applicable to the aluminium blinds and façade structure already in production.
- **Less experimental:** The commissioning perspective was clearly set on drawing from existing technologies and their visual effect to avoid imponderability.

The reasoning expressed throughout the discussion also provided insights into supposedly more intrinsic motivations among members of the commissioning party.

- **Reference:** Certainly, the new building serves as a reference to the high economic power of the county (Tirol/Innsbruck). A dynamic LED façade is seen as a visual reminder of the innovation potential in the Tyrolean area.
- **Location:** The extraordinary location in the centre of the historic city guarantees fantastic visibility of the WKO Chamber.
- **Manifestation:** This visibility also underlines the representative aspect of the building not only for the regional economy but also for various political actors and their responsibilities.

The above described meetings and discussions led to a series of findings relevant to the potential setup of an ideation/stakeholder workshop for the façade.

Urban/political context

The location of the WKO development in the historic city centre of Innsbruck is a unique opportunity. The discussions showed that everyone involved was very aware of the specific visibility of the WKO as an institution and its representative responsibilities. Not only the WKO themselves but also local political actors support an emphasised visibility of the WKO in these historic surroundings. The mayor as head of the local administration supports visible media integration into the fabric of the building. This political openness came with an articulated critical sensitivity toward the use of advertising material. On the other hand, the commissioners themselves followed a very subjective WKO-centred line of thought, arguing for a media façade as an additional advertising space for their members. There seemed to be relatively little knowledge of the local audience for a potential Media Architectural façade.

Planning Process

The planning of the Media Architectural situation followed a process often described in the field (see 2.5.5). Specific lighting technologies and technical budgets were discussed very early in a screening process with manufacturers and technical partners.

However, these screenings were not initially based on a site-specific communication and mediation concept. The integration of the building and its visual appearance in an existing lighting master plan was not discussed. On the contrary, the decisions about visual and interactive requirements were mainly made on the grounds of a general ability to display existing marketing material. This ability was mainly elicited by questions about technical qualities that resurfaced during meetings. These questions were mainly related to anticipating visual and dynamic performance of the lighting system, such as pixel resolution, brightness of light sources, expected viewing distances or the lighting situation within the building, behind the aluminium cladding. This need for anticipation of options and their evaluation was also evident in requirements for comparable building applications and locations to be visited, or in the wish to test prototypical installations as a confirmation of the actual visual impression to be achieved.

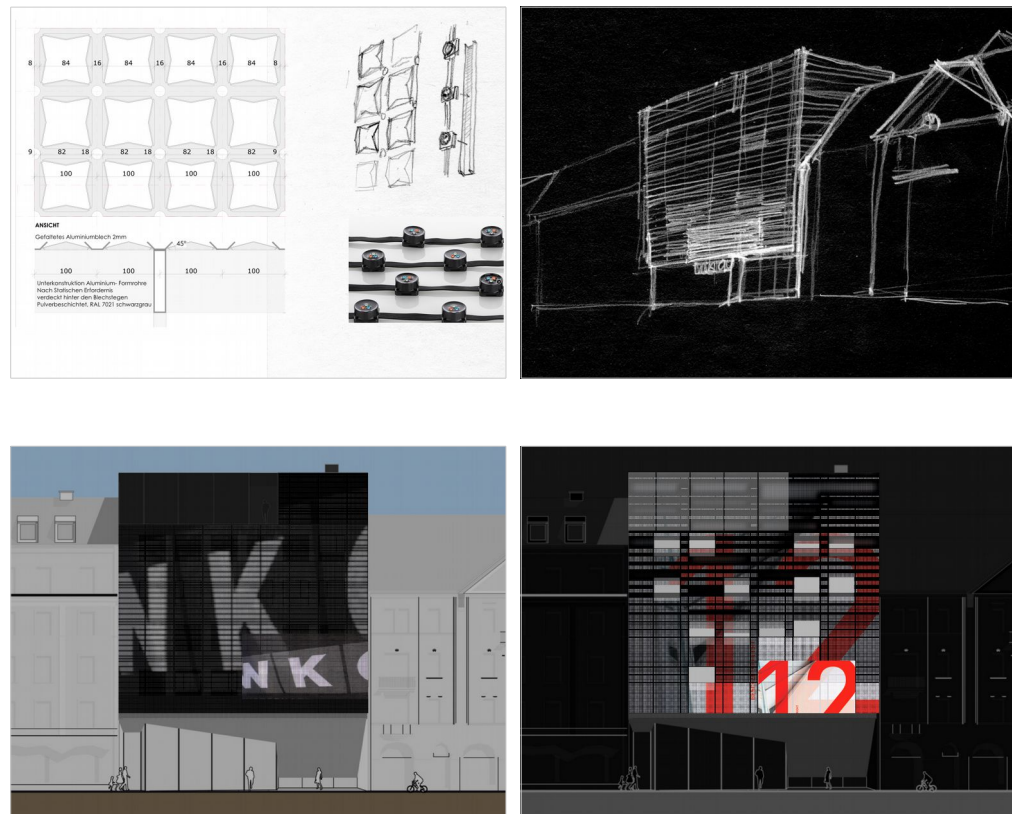


Illustration 3.18: Innsbruck workshop: Initial sketches and visualisations based on structural façade cladding and resulting pixel pitch. © artXmedia and author.

Along with these technology-related interrogations, various potential technical partners and solutions were brought into the discussion. Major uncertainties throughout this discussion were related to the actual time planning of the technical development process and the concept and production of visual content.

Opportunities

During the initial stakeholder discussions and the exchange of rather technological constraints or political ambitions, it became clear that any visual content approach to the building façade had to mirror WKO's role as a "platform". Such a platform view would need to work on several levels:

- **Representational level:** With an economic platform, WKO could make regional innovation visible, in a literal manner by featuring successful members and start-ups in a visually engaging show reel.

- Co-operational level: Innsbruck features a range of academic institutions focusing on research and innovation in management and communication. As a visible platform for cooperation between business and education, the building façade could be used for digital media projects with media and information engineering institutes.
- Curatorial level: A platform model provides content diversity and timelessness, as it engages with current developments, achievements and challenges. A curational plan could incorporate representation as well as cooperation on a narrative level.
- Functional level: As a second layer, or even as an alternative to the curatorial platform approach, the façade could work as an integral part of the building's orientation system. Accessibility and transparency are key motives of WKO's self-conception as a platform so the façade could serve as a visual and functional extension of the building's digital orientation system.

By December 2013, it became clear that due to internal planning, the proposed integration of a display system into the building's façade would not be realised for the opening in Summer 2014. This was a setback for the conceptual developments and technical research undertaken for the workshop meetings. On the other hand, a variety of communicative opportunities were identified in relation to the communal role of the commissioning party within the city and, of course, the building's unique urban setting. However, the workshop sessions and the analysis of the discussions prior to the commissioner's decision brought to light a range of opportunities for an integrative and participatory design process for Media Architecture and its content strategy.

The workshop scenario for shared experience and content creation remains a feasible proposition for the Innsbruck building and it is hoped that it can be applied as a curation concept in a future retrofit of a media façade into the existing façade.

3.5.5 Participatory MAA Archive

Reflections through design practice in this chapter include the development of an extended visual interface to the Media Architecture database introduced in Chapter 2. Following characteristics of discursive and experiential learning discussed in Sections 3.2 and 3.3, the intention of this updated version of the MAA database is to allow its application in co-creative settings for Media Architecture design. Using a combination of data visualisation and filtering approaches based on modern web technologies, users can search the database individually or in groups on their own mobile devices. The database has potential to be applied as a tool for contextualisation and ideation to explore and extrapolate conceptual patterns in Media Architectural appliances and their characteristics.

Visual Exploration made Interactive

An outcome of the first stage of this research project was the definition and setup of a project database on Media Architecture, with examples ranging from the early 20th century to today and including both temporary as well as permanent installations. There were initially around 120 project entries, with textual descriptions, images and linked videos. All entries were also marked with geolocation data and tagged according to qualities and categorisations found in the literature and architectural research (see Section 2.5.2).

The early prototype of the database was built with a combination of Google Spreadsheets and the *Exhibit* interface framework, presenting the data in three major visual modes: thumbnail-list, map and timeline (see Section 2.5.4). In all modes, it was possible to apply a faceted search on the set of results, or the combination and recombination of various search terms in order to filter the results shown in each mode. Additionally, an experimental typographic tag-cloud view was set up to visualise the dispersion of projects according to their overall meaning in an architectural environment. With the changing focus of the research toward discursive practices in design, described in Chapter 3, the MAA provided opportunities for application in a primary research context, for instance, through externalising workshops or in real-world projects during conceptual design phases. However, the interface structure required adaptation for this purpose in interface and web technology terms.

In 2011, the original *Exhibit* publishing framework was transferred from an actively developed research web tool to an open-source project⁷¹. While functionally promising, the technical structure was not ready for flawless use on modern web browsers and mobile devices. The second stage of the MAA was thus aimed at redesigning the visual and interactive interface of the MAA to account for flexibility in device formats and accessibility for design-oriented workflows.

In an effort to make the database available in a variety of learning situations (see 3.4), a new visual interface was designed and prototyped on the basis of a “mobile first” approach for tablets and individual smartphone usage. Conceptually still a website, its aim is technical and visual accessibility through a web application, with the introduction of a user administration for integrated participatory processes of extending and editing the database.

Design for Accessibility

Based on the concept of visual prototyping formulated in 3.5.2, the redesign followed objectives for emphasising discursive opportunities in the database:

- Visual accessibility
 - Focus on prominent visual material (images, videos, maps)
 - Visual structure and colour-coding of tagging system and categorisations
 - Extended options for defining visual views on the data (data visualisation and interactive sorting)
- Technical accessibility
 - Usable on individual and mobile devices to broaden the range of potential users
 - Ability to integrate svg and mapping technologies to be able to support rich interactive data visualisation

⁷¹ Originally, the Exhibit project was based on the SIMILE data visualisation project and supported by the Library of Congress. It was developed in a partnership involving MIT Libraries, MIT CSAIL and Zepheira.

- Modern web technologies based on JavaScript and a lightweight data-base (MEAN stack)
- Participatory accessibility
 - Open database: Introducing user administration to allow participatory content editing in the database
 - Web application to be used independently of devices
 - Suggestion-based, but with open taxonomy

The redesign process for the MAA database included exploratory practice on wireframes built in *omnigraffle*. Based on these conceptual sketches, static screen layouts were designed in *Adobe Illustrator*, building on a modern *Bootstrap* grid system for multi-device screen layouts. The visual screen design was then applied to a range of screens, depicting the typical use cases for search, filtering overviews and detailed view scenarios. An interactive online click-dummy drafted in *Invision* was used as a fast-forward approach for early user experience and device testing.

In parallel to the visual exploration, investigations into current technology stacks for web applications were carried out. These included data visualisation experiments using the *D3 visualisation framework*⁷². *D3.js* is a JavaScript library using HTML, svg and CSS. It emphasises web standards and combines powerful visualisation components with a data-driven process to manipulate the document object model (DOM). Also building on web standards, the *Bootstrap CSS framework*⁷³ and its grid system was applied as the basic layout scaffolding for responsive design to be used on a broad range of devices.

To include these explorations into a modern and flexible web development process, the author made use of the *MEAN open-source development stack*⁷⁴. *MEAN* includes MongoDB, Express, Angular and Node.js as web technology components. It is completely based on JavaScript for both server-side and client-side environments. Based on this setup, a first functional prototype for a user-based MAA was built for basic Command, Read, Update and Delete (CRUD) database operations.

72 <https://d3js.org>

73 <http://getbootstrap.com>

74 <https://meanjs.org>

The idea behind this technical re-structuring was the use of the database as a tool for design reflection. As discussed in Section 3.3, strategies of conceptual thinking with prototypes represent an important part of the design process. They not only help in testing intended functional and aesthetic properties (modelling) but also provide modes of practical reflection on the design process itself (see Schön's (1983) notion of "reflection-on-action"). In this context, the redesign and redevelopment of the MAA focuses on self-guided exploration and participation for using the database.

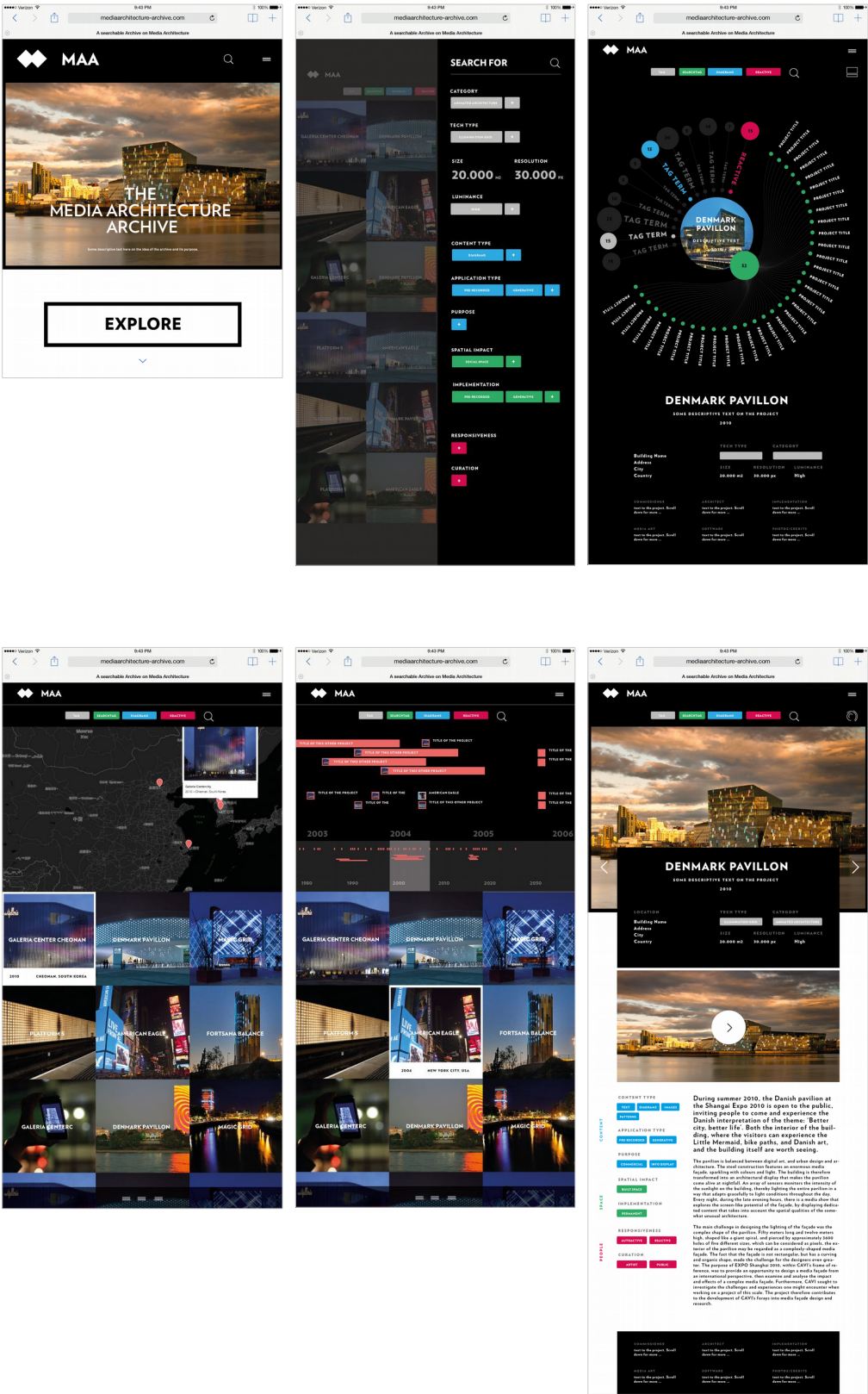


Illustration 3.19: Screenshots of a visual fidelity prototype for the MAA archive built in Invision

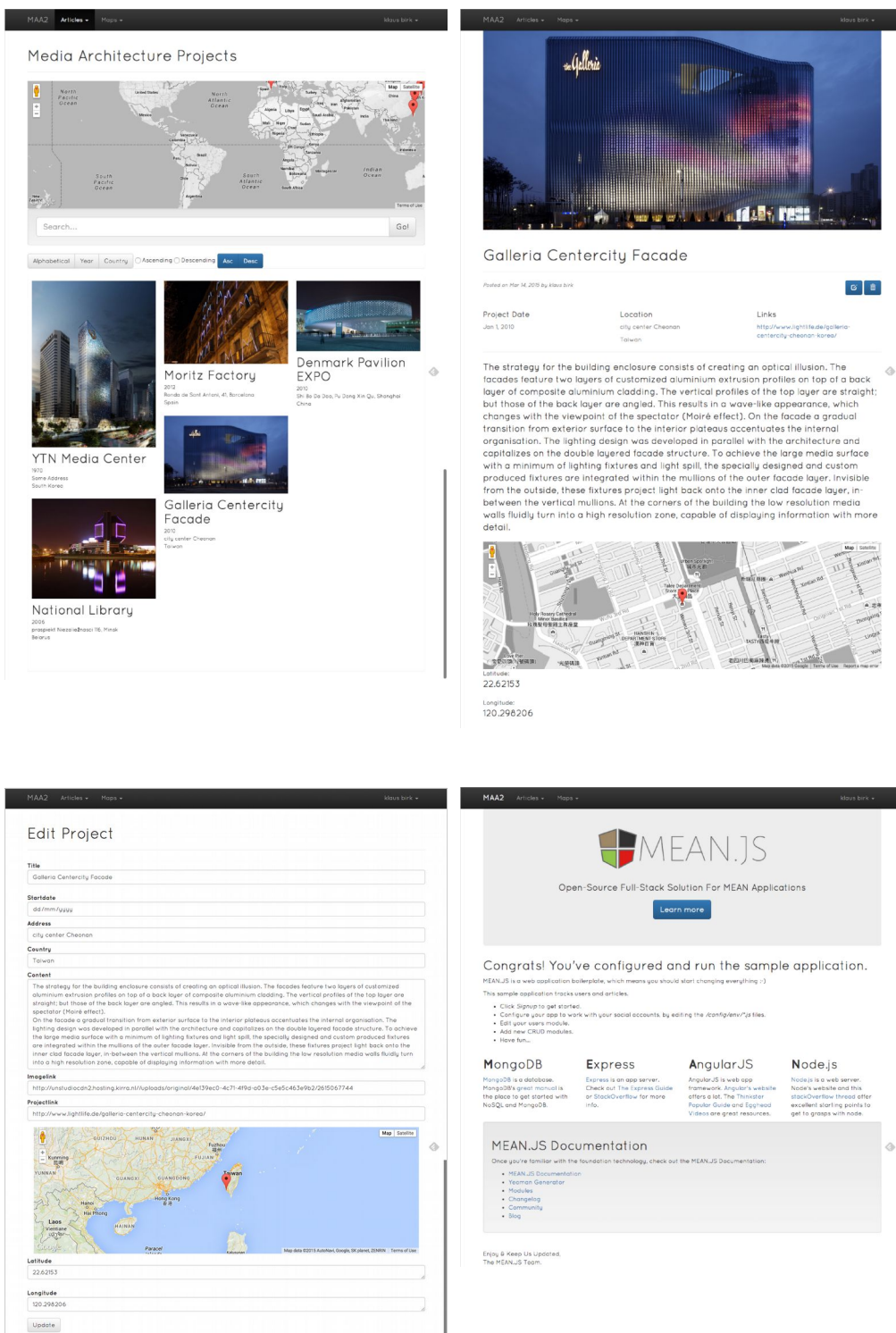


Illustration 3.20: Screenshots from a first functional prototype built on the MEAN Development stack, a Node.js based javascript environment



Illustration 3.21: Testings of the MAA functional and visual prototype on a mobile touch device.

3.5.6 Learnings from Practice

As described in Section 3.3, strategies of conceptual thinking with prototypes present an important part of the design process. They help test intended functional and aesthetic properties (modelling) while offering practical reflection on the design process itself. Reflections through design practice at this stage focused on design as and for discourse. The applied design tools were built on research methods for action and primary research and included redesign and development of the MAA archive, prototypical visualisations for ideation, exploration and reflection, as well as a set of workshops geared toward participation and collaboration in the context of design for Media Architecture.

Following characteristics of discursive and experiential learning discussed in Sections 3.3 and 3.4, the intention of the MAA database update was to allow its application not only internally as an archive for research but also in co-creative and participatory settings for Media Architecture design. Using a combination of data visualisation and filtering approaches based on modern web technologies, users are enabled to search the database individually or in groups on their own mobile devices. The database provides potential for application as a tool for contextualisation and ideation to explore and extrapolate conceptual patterns from Media Architectural appliances and related characteristics.

Visuals for Generating Ideas

Visual exploration is a powerful learning tool for making information accessible to others and establishing informed collaboration and discourse. As reflective design practice, visualisation processes are considered useful in three stages of a design iteration: ideation, exploration and reflection. Considering these stages, various practical activities can be carried out. These include explorations in interactive data visualisations, strategies for visual collaboration across stakeholder groups (workshops) and visualisations as tools for conceptual framing and reflection (conceptual schema visualisations). These activities have been developed to integrate visual methods as language tools to promote discourse and reflection on public developments in Media Architecture.

Visualisation strategies to interface the public with environmental data and dynamic processes are generally becoming useful tools to foster digital transparency, awareness and participation among citizens. Projects such as *Realtime Rome* or *NYTalk*

*Exchange*⁷⁵ make digital references to vital social processes in a city that are interesting to watch and understand visually. Leveraging a sense of local, individual relevance inherent in built environments, such processes can start small, for instance, in local group meetings, and develop immediately useful digital tools and visualisations for citizens⁷⁶.

Visuals for Generating Discourse

In the context of prototyping workshops for Media Architectural content, we have suggested the use of generative design research methods for creative exchange between stakeholders (Sections 3.5.3 and 3.5.4). These methods were applied in collaborative ideation sessions to generate individual project proposals and explore them in fast, lo-fi prototypes to open up the debate. As strategies of cooperation, they allow a design discussion based on “sketchy talk” (Glock 2009) in a multi-stakeholder environment (see 3.3.2). Depending on the current workshop tasks and the backgrounds of individual participants, their roles and contributions changed significantly during the visual prototyping procedures. However, this assertion of roles was never permanent, but rather “a consensual act without implying power inequality” (McDonnell 2009, p.49).

The workshop outcomes discussed in 3.5.3 and 3.5.4 suggest the application of the project database as a participatory contextualisation tool, helping workshop participants understand existing project setups. In reference to the nature of the workshop tasks, the database could itself be a collaborative element by allowing the conversational analysis and editing of existing and new projects. Practical design explorations thus included the redesign and redevelopment of the first version of the MAA (2.5.4) to externalise the research tool and promote self-guided exploration and participation in the database. For the provision of the MAA in the semi-public settings of participatory workshops, its accessibility had to be re-organised on three levels in terms of:

- *Visual accessibility* (front-end user interface and visualisations)
- *Technical accessibility* (current web technologies and mobile device support)
- *Participatory accessibility* (providing user management for database editing and community building)

⁷⁵ Both projects were developed by the MIT's Senseable City Lab, <http://senseable.mit.edu>

⁷⁶ Initiatives such as the Open Knowledge Foundation are working actively to empower citizens to engage with public data and civic technology (Code for Germany/Code for America/OpenKnowledgeFoundation, www.codefor.de). These platforms have gained high visibility and extend the transfer of local projects to other communities and places.

In sharing the database in the exploratory environment of a workshop and using its potential for contextualisation and familiarity with the subject, it supports the aim of managing the complexity of collaboration by “sharing a common vision among all collaborators as the vision evolves” (Carroll 2000, p.8).

Visualisation for Engagement

The various visualisation strategies and their implementation in collaborative workshops are oriented toward engaging participants in processes of negotiation and collective agreement over design issues in Media Architecture. Ideally, such engagement not only consists of the act of taking part in and informing the design process, but also eventually leads to perspectives of “shared ownership of the design” (McDonnell 2009, p.35).

Recent years have seen a rise in DIY approaches to place making and urban interaction (Townsend 2013) (Lange & Waal 2013), which can be interpreted as a backlash to the corporate smart city and the flood of data-driven developments directed by technology corporations. Embracing open culture and digital democratisation, civic hacking approaches aim at developing smart city literacy – a cultural skill set of reading and writing the digital city⁷⁷. Civic laboratories for developing knowledge and community networks provide potential for citizens to gain back individual control in the digital city. This stems from the local exchange of skills and how-to knowledge as well as an inherent process of gradually accessing, controlling and thus owning parts of digital communication, for instance, in Media Architectural contexts.

This sense of ownership through local, multidimensional and co-creative forms of content prototyping is essential for collaborative workshops and open data collection. Summarising the reflective practical approaches to reflective learning and inclusive prototyping discussed thus far, the following elements are inherent to a design approach to ownership:

- Setting up a reflective process: A workshop model of reflective thinking (Kolb) through a combination of generative design research methods for ideation, contextualisation and prototyping.
- Making knowledge accessible: A set of visual tools and learning material for low-barrier access to data analysis. Conceptual graphic design serves as a strategic practice of keeping the “cognitive load” low (Sweller 2009).

⁷⁷ The author addressed this in his talk: “Urban Digital Literacy — Reading and Writing the (post-)digital City”, originally held at Typotage leipzig 2015 www.typotage.de. The text is also part of the online publication platform www.post-digital-culture.org.

- Levelling knowledge gaps: A transdisciplinary process using extensible data archives and information visualisation as an inclusive form of knowledge democratisation, promoting knowledge exchange between different groups of experts.
- Exchange concepts through execution: Developing new (expert) knowledge through visualising shared knowledge of mixed groups using a “combined viewport”.

As Pask (1976) described, the exchange of conceptual ideas through practical testing (“execution”) is integral to principles of conversational learning. Developing and exchanging prototypes helps extend participants’ individual threshold knowledge (Meyer & Land 2003) in a heterogeneous group of individual disciplines. This knowledge extension requires individuals to specify and elaborate on their current state of thinking as a basis for discussion. Taking action (in prototyping) initially demands taking a definite position, engaging oneself and owning an idea or perspective for negotiation. Here, digital tools for visual design contextualisation and exploration can provide an opportunity for multimodal exchange of perspectives. “The most significant aspect of digital design tools is that they can make specialised knowledge accessible, and hence usable and capable of being appropriated by non-experts” (Lorenz 2011, p.16).

3.5.7 Engaging Methods

One way of fostering a reflective attitude in design is the consolidation of systematic action based on a repertoire of techniques and methods. They can be used and individually adapted to the design situation at hand. The main driving force for using a particular method is the intention a designer brings to the situation. However, there are no prescriptive situations calling for specific methods. As Löwgren and Stolterman (2007, p.90) noted, methods never guarantee a usable result. They are far from generating the same results when used by different designers. This is a perception of which most professional designers are aware—consciously or unconsciously. However, when working with a diversity of stakeholders with different backgrounds and approaches to problem solving, this becomes an issue for clarification⁷⁸. The application of systematic methods from a reflective design point of view is less a means of achieving a previously defined result. However, it proves useful in structuring a design approach and makes the outcome understandable in relation to the process.

⁷⁸ An example from the collaborative multidisciplinary workshop (3.5.3) is the “Phonogram/Interactive Piazza” group.

While methods in design practice are also used for planning and coordination purposes, making the diverse steps in the design process manageable within a timeline, we concentrate on three other aspects derived from practical experimentation that are relevant to a methods approach for reflective design and ownership in Media Architecture.

- *Material for learning* expand an individual's repertoire of tools for diverse situations. While this is generally nothing more than a generalised, prescriptive and formal approach to a design problem, methods lead to better results when sophisticatedly applied and critically adapted to the situation at hand (Tools: MAA database, visualisation and prototyping methods).
- *Systemised forms of communication* establish a common ground between designer and user, commissioner and member of other disciplines participating in the design process (Tool: Collaborative workshop formats).
- *Aggregations of historical and professional knowledge* provide profound knowledge in relation to underlying rationales through methods of information aggregation and clustering (Tools: MAA database and participatory editing practice).

Certainly, these characteristics of methods will not be able to guarantee outcomes that automatically raise public acceptance of Media Architecture and its integrative potential by a definite degree. As a form of quality assurance, methods in general are limited, as their application depends on situated properties and individual experiences. However, while the analysis and interpretation of, for instance, collaborative workshop outcomes are not transferrable, the processes themselves are and provide a systematic approach to working toward integrative and communicative design in Media Architecture. In this respect, the comprehensible evaluation of design method outcomes is an inherent aspect of reflective practice. In the Aarhus workshop (see 3.5.3), for instance, no specific evaluation methods were introduced or applied. However, the workshop location enabled a lively exchange between group members as well as individuals involved in other workshops. The process of visual prototyping invited situations of quick, informal and “on-the-fly” testing with external participants as an early, general proof of concept. The reactions of others toward the prototypes “enthused” participants either to continue and provide more detail in their work or to take alternative routes. This continued form of “qualitative probing” is a reflective method in itself that works toward increased stakeholder engagement.

On the Meta Level: Research Process as Toolset

Overall, the procedural activity of applying reflective design methods in the research itself, for instance, in developing visual schemas of theoretical concepts or in visualising a visual archive, becomes an abstract blueprint for a proposed method toolset for reflection in Media Architectural design. The ways in which design artefacts support design thinking and materialise the discussion (referring to Latour's "immutable mobiles" (Latour 2011), see also Section 3.2.2) impact the research process both on a procedural level (reflective research tool) and an outcome level (reflective design tool). This possible calls for a move from an engineering-based understanding of design (in the scientific tradition) to a design-led understanding of knowledge generation through practice, which values design as a human activity with its own intellectual treatment. In this respect, theoretical affordance becomes even more important for producing support for design practitioners. Reflective design methods need to make possible the "incorporation" of reflective practice into the designer's own approach. This demands a perspective of not "using" theoretical models but recognising them as conceptual "affordances", as clues and inspirational sources of guidance and influence (Rogers 2004; Norman 1990).

3.6 Summary

This chapter shifted focus from Media Architecture as a technologically enhanced spatial experience to Media Architecture as a shared experience of participation and discourse. In particular, design action and ways of applying (visual) materialisation as a methodology for discourse and conversation were explored. The author was specifically interested in translating reflective strategies of visualisation and prototyping from his own research journey to a set of tools for ideation, cooperation and stimulating discourse, following the overall aim of this research to develop a methodological foundation for sustainable and engaging communication design in the conceptual design stages of Media Architecture practice.

The first part of the chapter reviewed the use of creative tools in design practice as methodology specifically for dialogue and reflection. It proposed an analysis of reflective methodologies in design that are intended to engage with a diversity of stakeholders in situated procedures of collaboration. Drawing on creative tools as elementary to situated experiential design language (Gänshirt 2007), principles of experiential reflection and learning theory (McLeod 2013; Meyer & Land 2005; Perkins 1999) were discussed and proposed as conversational sense-making principles for Media Architecture. The chapter argued that by embracing visualisation tools as a concept for taking discursive action, responsibility and ownership, design processes for Media Architecture can develop relevance as a process of building situated individual capacities in stakeholders. As a consequence, practice-oriented studies at this stage addressed design and visualisation processes for generating reflection and engagement. Sketching, visualising and prototyping were applied practically (3.5.1) as communicative means for encouragement of learning and distributing knowledge. Data visualisations based on the MAA were designed and applied as a potential tool for self-exploration and investigation into the dataset (3.5.2). Collaborative sketching and prototyping methods were introduced in workshop formats for developing ideas and exchanging a range of stakeholder perspectives (3.5.3 and 3.5.4). Finally, visual schemas helped the researcher frame abstract conceptual approaches from other research fields in the context of this study (3.5.2).

The chapter lays the initial foundation for a prototypical collaborative methods framework (see 1.3, objectives 3, 4, 6). The dialogical approach to visual design essentially describes a process of re-framing (Schön 1983), generating new granularities of detail and leading to new implications, for instance, through a coherent series of sketching or prototyping actions (see 3.5.2 and 3.5.3). What became apparent here was the congruence of multimodality in experience-based learning processes with

various modes of designerly procedures for ideation, exploration and conceptualisation in research (Biggs 2004a; 2004b). The visualisation methods applied for ideation, exploration and reflection generated three types of outcomes relevant to a conceptual design framework for Media Architecture: *Material for learning*, expanding an individual's repertoire of tools for a specific Media Architecture problem or situation (Exemplary tools: MAA database, see 3.5.5; Visualisation and prototyping methods, see 3.5.2); *Systemised forms of communication*, establishing a common ground between designer and user, commissioner and members of other disciplines participating in the design process (Exemplary tool: collaborative workshop formats, see 3.5.3); and *Aggregations of historical and professional knowledge*, establishing contextual references on visual and qualitative levels through information clustering (Exemplary tools: MAA database and participatory editing practice, see 3.5.5).

While the outcomes of methods are individual, the overall methodology describes a systematic approach to work that looks toward integrative and communicative design. However, the structured approach to visual exchange within the workshops also provided opportunities to re-evaluate and probe collective ideas on a regular basis (see 3.5.3). This promoted enthusiasm (Wilkie 2010) and socio-dynamic momentum among the participants and led to increased stakeholder engagement. Overall, the chapter discussed the design of a process of design (Buxton 2007, p.407) in Media Architecture and its appearance through materialising iterations. Thus, on a meta level, the reflective design research process itself provides opportunities for a design toolset. A perspective on the concept of "tool as outcome" is discussed in the next chapter. In summary, the findings in relation to designing (for) discourse are as follows:

Findings from Literature

- Dialogical approach to visual design as a process of re-framing and opening up to new implications.
- The congruence of multimodality in experiential learning processes with ideation, exploration and conceptualisation in design provides opportunities as a structural base for a dialogical design process in Media Architecture.

Findings from Practice

- A conceptual method framework based on visual communication for discourse generated three types of outcomes: material for learning, systemised visual communication and information aggregation.

- Visual design methods generate ideas. Workshops created a visual “sandbox” for approaching a complex situation in a structured but playful way. Visualisation methods were applied as narrative guiding principles, making a design approach understandable in relation to its outcome (see Löwgren & Stolterman 2007).
- Visual design methods generate discourse. Collaborative visualisation workshops are a format for providing different perspectives and granularities of detail to participants using a coherent series of sketching or prototyping actions.
- Visual design methods engage. The effect of quickly materialising a discussion using fast-forward visualisation and model-making led to high degrees of enthusiasm among the participants through making (Wilkie 2010) “their ideas” work. Self-reflection through visual materialisation and communication becomes a key to ownership.

4 PROPOSITION — A REFLECTIVE METHODOLOGY

4.1 Introduction

In the previous chapter, the discussion of design as/for discourse led to the application of design and communication methods for conversing about and reflecting on Media Architectural practice within a series of multi-stakeholder design workshops. The practical design and application of visual ideation tools as well as the MAA itself presented an example of design for discourse through design action. Methods originally developed and applied by the researcher as tools for reflective design action within his own research process were iteratively translated to various constellations within conceptual design phases for Media Architecture. To follow the aim of this thesis to develop a design methodology engaging communication design concepts in early stage Media Architectural design, these elements need to be integrated with a structurally comprehensive approach to reflective participatory practice.

Based on an adaption of self-reflective procedures in experiential learning, this chapter proposes a related methods framework for conceptual design tools in Media Architectural design procedures (see Section 1.3, research objectives 5 and 6). Its application presents a reflective methodology rooted in the concept of shared threshold knowledge (Kolb 1984; Meyer & Land 2003) as an experiential approach to contextualisation, inclusion, envisioning and assessment in Media Architectural design processes. In light of theoretical and practical considerations of communication and design processes as both a tool AND outcome, it presents the MAA as a practice-led case for how a tool initially conceived as self-reflective research tool can become part of an actual practical design outcome, supporting self-reflection in a multi-stakeholder design process.

The chapter begins by revisiting experiential learning theory through the troublesome knowledge concept (Section 3.4.1) and adapting it to a discursive setting. Based on this, a self-reflective conceptual framework is outlined, presenting an extended adaption of a Learning Cycle approach for drafting Media Architectural experiences. The importance of the “tool-as-outcome approach” is then discussed as a conceptual base to knowledge creation and ownership and related to existing research perspectives in the area. Again, this conceptual description is challenged and complemented by a stage of practical reflection, including a revised classification system and visual/technical redesign of the MAA included as a visual tool for collaborative investigation (see Section 1.3, research objective 7). Additionally, a set of specific conceptual design methods is presented as a framework for design workshops in Media Architectural contexts.

4.2 Threshold Concept Revisited

Based on the discussion of learning concepts (Section 3.4), especially with regards to conversational and experiential learning (Pask 1976; Kolb 1983; Meyer & Land 2003), we argue that a conceptual design process for participation in Media Architecture should be building on an articulated understanding of communication thresholds and their potentials for creative reflection and ownership. As outlined in Section 3.4.1, Perkins' notion of "troublesome knowledge" (Perkins 1999) could serve as a key concept for a reflective conceptual framework within an interdisciplinary Media Architectural design process.

In summary, the idea of threshold knowledge suggests that individual knowledge is similar to a "field", with centre points and boundary areas. New knowledge is acquired by advancing to these boundary areas or thresholds, entering and becoming familiar with previously unarticulated new grounds. For Meyer and Land, the threshold concept is akin to conceptual gateways or "portals, opening up a new and previously inaccessible way of thinking about something" (Meyer & Land 2003). Every choice means rejecting alternatives, sometimes because the alternatives seem "troublesome" in that they lie outside the individual field of expertise, provoking difficulty and discomfort. However, recognising this "troublesomeness" of decisions or perspectives as potentially fertile ground is a key concept of threshold. With regard to learning concepts, Meyer and Land argued that a learner needs to overcome this discomfort as individual progress. The threshold concept can then have a **transformative** impact on how a learning individual perceives a subject or specific field of study. Other main criteria defining a threshold concept are:

- **Irreversibility** —once understood, the concept deeply changes the perception of a given subject. It's unlikely to be unlearned.
- **Integration** —concept between any conceptual spaces such as subject areas or disciplines, exposing previously hidden interrelations.
- **Boundaries** — new 'conceptual spaces' opened up by these portals are themselves bounded by thresholds opening into new conceptual spaces (Meyer & Land 2005).
- **Reconstitutive** —a re-evaluation of initial subjective thoughts and beliefs through students connecting learnings with the world around them.

- **Discursive** — shifting perspectives express themselves in a shift toward new vocabulary, be it self-generated or related to terminologies from a certain discipline or community. “It may involve natural language, formal language or symbolic language” (Meyer & Land 2005, p.373).

The interrelations between conceptual spaces of individual knowledge may be troublesome, even *counter-intuitive* in that they are not coherent with the familiar ways of thinking or doing within, for example, a discipline. However, they may be understood as passive vocabulary. As Meyer and Land noted, threshold concepts “lead not only to transformed thought but to a transfiguration of identity and adoption of an extended discourse” (Meyer & Land 2005, p.375).

Troublesome knowledge itself refers to aspects of knowledge that may arise as difficult or troublesome for a learning individual. Perkins (1999) identified several distinct categories:

- **Ritual knowledge** as a form of knowledge that is based on rather mechanical rules and routines, such as learning names or dates by heart. This knowledge is potentially troublesome as the ritualised nature of learning may lead to an inability to make connections to related ideas.
- As **inert** yet passive **knowledge** that Perkins described as learned but not used actively. It becomes troublesome as the learning process is not related to the learner’s real world experiences.
- **Conceptually difficult knowledge** is knowledge that tends to be difficult for the learner to grasp, sometimes due to previous misinterpretations or misconceptions in everyday experiences, due to the complexity of the subject itself, or due to a combination of these factors. A typical reaction to this applies ritualised forms of learning, thus further separating the conceptual knowledge from its potential relevance for the learner and his actual experiences.
- **Alien knowledge** bears conflicts in making connections with already acquired individual knowledge. These conflicts may stem from ideas rooted in foreign perspectives, disciplines or cultures that are different or contradictory to the learner’s own experiences.
- **Tacit knowledge** (Polanyi 1974) is knowledge gained implicitly through intense practice and experience in a specific field. It forms a kind of background knowledge, that is on one hand, important for an understanding of a subject area but on the other, not explicitly dealt with.

Perkins noted that alien and tacit knowledge often bear a counter-intuitive character, in that they unfold their actual meaning only through intensified and active engagement with seemingly adverse concepts.

4.2.1 Shared Troublesome Knowledge

In the context of this research, it is argued that the notion of threshold knowledge as a conceptual parameter for learning processes can be helpful for the design of a method framework for collaborative Media Architectural design involving highly diversified groups of stakeholders. With regard to the potential of sustained individual participation, Meyer and Land's suggestion that a threshold concept "leads not only to transformed thought but to a transfiguration of identity and adoption of an extended discourse" (Meyer & Land 2005) offers a highly relevant conceptual base for individual identification and engagement.

Three of the above-mentioned main characteristics of threshold as a root concept are of specific relevance. First, its integrative potential brings together diverse disciplines, expertise levels and knowledge spaces through the idea of overlapping thresholds. Second, the discursive nature extends the individual "vocabulary" of stakeholders for articulating their own as well as common interests. Third, the correlating irreversibility of previously learned perspectives help overcome individual discomfort and enter threshold knowledge gates. In this respect, a design procedure for Media Architectural content should be able to elicit situations with sensitivity to individual thresholds of participants during the process. Provoking counter-intuitive situations of engagement is thought to provide momentum for individual reflection of one's disciplinary perspective as well as an appreciation of external demands.

Therefore, a conceptual design framework is suggested to nurture creative collaboration among stakeholders by provoking situations of counter-intuition. A collaborative workshop structure serves as a vehicle for the framework, allowing the integration of conceptual design methods as well as specific tools developed during the first stages of design research practice (Sections 2.5 and 3.5). We propose the notion of *shared troublesome knowledge* as the main conceptual construct behind a reflective design framework targeted at a collaborative experiential learning process for Media Architectural design. Based on the integrative potential of connecting diverse conceptual thresholds, an applied conceptual design framework needs to seek and nurture collaborative situations and methods that allow the structured discovery of interrelations between stakeholder perspectives. Within design workshop constellations, a methods approach allows for the examination of *alien* and *tacit knowledge* as specif-

ics of troublesome knowledge among stakeholders and their respective counterparts. On an additional level of self-reflection, participants are encouraged to re-explore their individual *ritual* or *inert knowledge*.

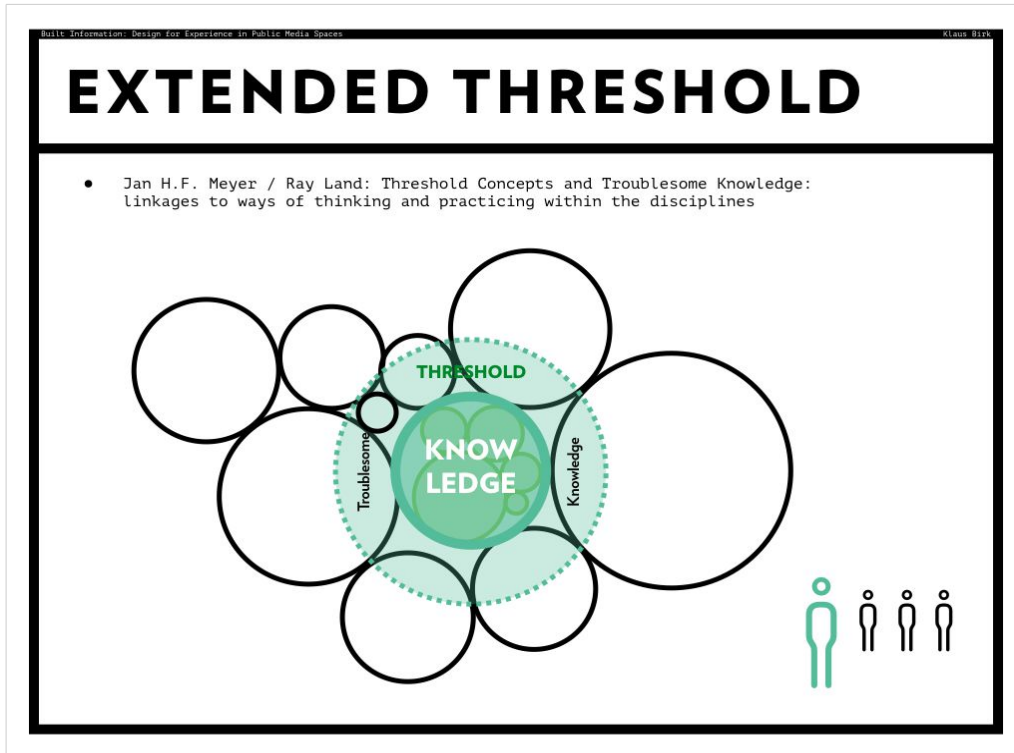


Illustration 4.1: Example of schema visualisation of conceptual thresholds, reflecting on Meyer & Land (2003)

Meyer and Land's arguments of transformation, irreversibility, interrelation and discourse of new knowledge through the concept of threshold knowledge are used in support of sustained engagement and ownership. Creating a conceptual environment for reflection on individual threshold knowledge acts as a main trajectory in these conceptual design workshops.

This conceptual approach is also rooted in practice. Learnings from interviews with practitioners (see 7.4 Expert Interviews) and field reports on prototyping processes in Media Architecture (Korsgaard & Brynskov 2014) confirmed a commonly noticed "language gap" among stakeholders. For Sebastien Noel from *TROIKA*, the main task in the design process for situated architectural media is to better understand motivations, specifically those of non-creative stakeholders, such as regulation offices or corporate representatives:

"I think understanding a bit more about what they care about and their culture in order to enable the level of innovation that you want to give to the project is very interesting. This is a big learning curve as a designer because you do not know them that well." (Sebastien Noel, *TROIKA*. see 7.4.3)

For Noel, Media Architecture for engagement and relevance first of all needs to overcome the structural problem of convenience. In his view, long decision-making processes and insecurity often lead to opting for (technological or aesthetic) standards and not necessarily for relevant solutions.

Due to the often site-specific and technology-dependent orientation of Media Architecture, design studios such as *TROIKA* or *3deluxe* actively incorporate the confrontation with alien knowledge into their design process. In most cases, this takes place in the form of situated observations, correspondence with locals, and non-design disciplines such as engineering, regulation offices or traditional crafts. However, for Dieter Brell from *3deluxe*, this does not require two or more distinct disciplines at the table but rather participants' general openness during the process:

“Das heisst nicht, dass man immer zwei Leute aus verschiedenen Disziplinen zusammenstecken muss, um interdisziplinär zu arbeiten. Es geht für mich eher um die allgemeine Offenheit.” (Dieter Brell, 3deluxe, see 7.4.4)

The notion of “transfiguration” formulated by Meyer and Land (2005) can be observed in the feedback on fruitful collaborations with more or less “alien” fields of knowledge. Korsgaard and Brynskov, for instance, reported that this sort of exchange leads to an extended design discourse and, in some cases, an altogether reformulated prototype concept. In working directly with citizens and a municipality, their City Bug Report project developed into more of a “new form of self-awareness of city hall and employees” than an initially planned tool for digital citizen engagement (Korsgaard & Brynskov 2014).

Observations from the conducted MA workshops also revealed similar phenomena. Although in most cases the participants had a relatively clear vision of the general field of urban or Media Architectural design, there were obvious “stages of insecurity” among participants, especially when confronted with interdisciplinary tasks of visualising and prototyping. These stages can be interpreted as phases of learning the others' “language” and articulating individual perspectives accordingly. Taking action and putting individual skills to work allowed the adoption of previously troublesome knowledge (see Section 3.5.3 Collaborative Multidisciplinary Workshop, p154).

Finally, the self-reflective design actions in relation to the research process for this thesis can themselves be seen as a tool for a continued extension of the threshold to other areas of knowledge. The “designerly discourse” created through research, visu-

alising, writing and probing mirrors Kolb's learning stages as a nested iterative design cycle allowing "interrelations" to be drawn between theoretical and practical knowledge stages, thus continuously extending to new, troublesome knowledge.

4.2.2 A Self-reflective Procedure

Based on the previous theoretical and practical reflections on design processes for Media Architectural as well as discursive contexts, four general application areas become apparent for the use of a framework in a co-creative workshop context. As a conceptual approach, we structure these areas according to the individual stages of learning derived from Kolb's (1983) definition of learning stages: Concrete Experience, Reflective Observation, Abstract Conceptualisation and Active Experimentation.

A Framework for Contextualisation

In approaching a new field of knowledge or practice, collecting contextual information serves as an initial starting point. With the design of Media Architectural situations, such contextual information can include location-specific insights on an area or a building's usage, interviews of local community members or observations on traffic or media usage in that particular area. Contextual inquiry can also be applied by reviewing and/or visiting existing projects in practice, specifically how those examples were set up from a technical, interactive or procedural standpoint.

Contextual inquiry often begins from concrete experiences. These can be personal experiences and observations from an inquiring participant as well as collections of individual notions of other people with specific local relations, for instance, through qualitative tools (e.g., cultural probes). In this respect, researching context also includes phases of reflective observation of initial experiences. The contextual inquiry in our methods framework should not only provide means to collect information but also stress the importance of inspiration through contextual findings. Following the "prepared-for-action, not guided-for-action" paradigm formulated by Schön, contextual inquiry should allow for immersion into the richness and complexity of a situation to recognise appropriate approaches for the design task.

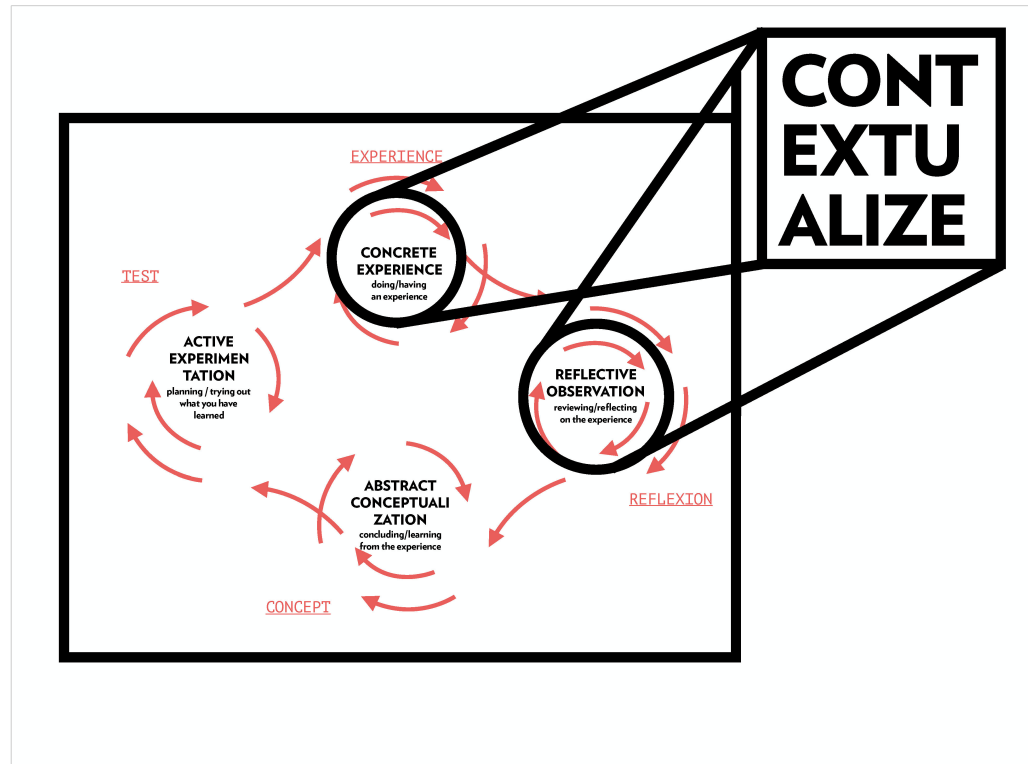


Illustration 4.2: Nested Learning Cycle as a reflective framework for contextualisation.

The following table provides an overview of suggested tools within the scope of the contextualisation stage. As tools, they can inform a range of method approaches (Usage) to Kolb's stages of Concrete Experience and Reflective Observation.

Tool	Living Database (3.5.5)	Field Trips (3.5.4)	On-location Data Collection (3.5.4)
Usage	Archive browsing Exploring various views on data and taxonomy system Multi-media project overview Access to further online sources on specific background information	First-hand experience of local urban situations, dimensions and technologies Initial group discussions	Observations of spatial usage Interviews with passers-by/locals Visual documentation of spatial usage & details (video and photographic material)
Aim	Observation	Experience	Observation

Table 3: Contextualisation stage: Overview of suggested tools, usage and aims

A Framework for Inclusion

In addition to informational and inspirational benefits of contextual inquiry, a conceptual design framework should focus on an inclusive approach to design content for Media Architecture. A multi-stakeholder setup ideally includes representatives from the commissioning side as well as architects, designers and, where required, the city administration or general public, thus setting the stage for an exchange of individual perspectives. These groups form inclusive units and engage in the previously mentioned activities of reflective observation. In exchanging their impressions from engaging with the MAA database or from field research, they enter an initial *teachback* phase, in which individual observations are collected, arranged in new narratives and conceptualised in a larger context.

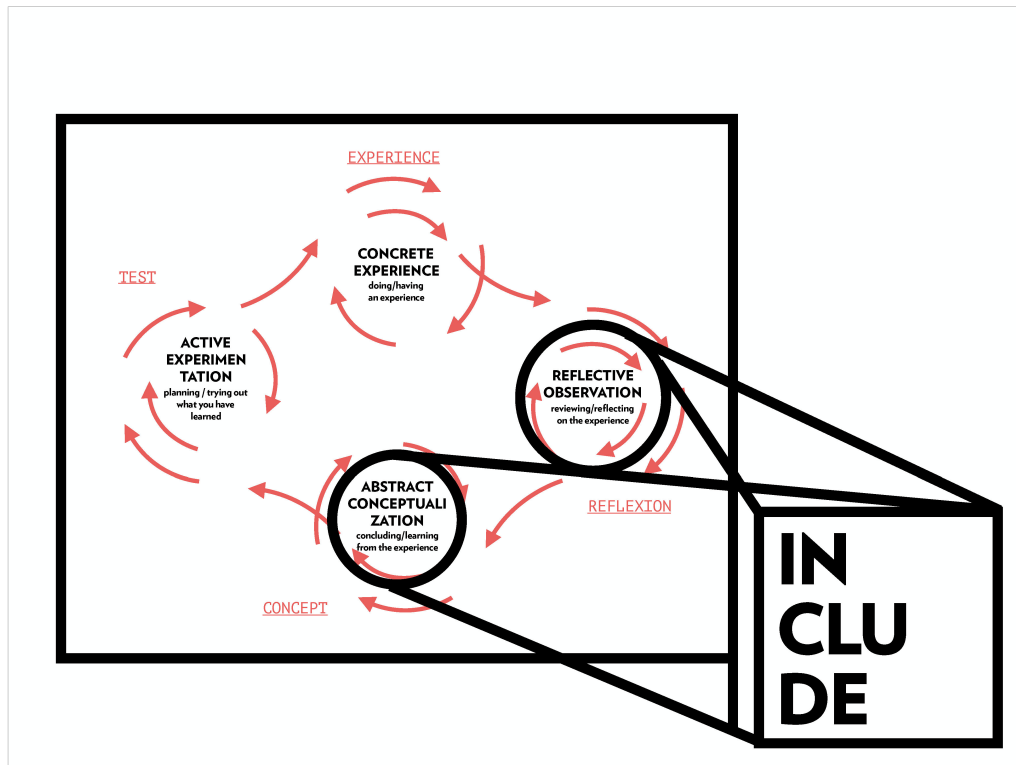


Illustration 4.3: Nested Learning Cycle as a reflective framework for active inclusion.

Similar to how Pask reflected on several pre-sets of “hierarchies” in conversations, such as teachers and learners, or people of similar and of divergent background (Pask 1976), we apply this thinking to a multi-skilled and multi-perspective design conversation, where individuals bring different mental repertoires to an inclusive process of reflection. Pask talked about individual “concepts” (i.e., coherent collections of procedures of thinking about, understanding and operating in the outside world). For him, concepts are related to topics; they are formed from individual experiences and previous encounters with other concepts or procedures. They develop through a process of acquaintance, adoption and adaption and require an active ex-

change. This can be related to specific skills, but in many cases may simply involve external perspectives and viewpoints for consideration. Just as these “concepts” define the foundation for individual standpoints and argumentation in a conversation, we use them as a resourceful thinking model. Together with the discursive and integrative characteristics of *threshold*, this is viable as a conceptual base for including stakeholder perspectives from an early stage in the process.

As described in Chapter two (notably 2.3 and 2.4), Media Architecture is a complex construct of shared experiences in urban space. To draft a methods framework for design relevance in Media Architectural design, we argue in turn that the creative process itself needs to be based on inclusive and engaging experiences. The basic statement here is that in our view, Media Architecture as an engaging experience needs to begin with an inclusive, experiential design process. As a particularly inclusive part of a methods framework, we propose a workshop system to integrate grassroots strategies to make digital options for change applicable by the broader local public. Initiatives such as local Open Knowledge Labs⁷⁹ working with visual software to “hack” a city provide an interesting role model for regular group meetings, which can be incrementally extended to nationwide networks for collaborative projects. In contrast to a common understanding of “hacking” as the technically motivated/oriented activities of a group of specialists solving their own problems on a more general, abstract level, we focus on an inclusive understanding of civic engagement for local empowerment and social change in the sense of Townsend’s (2013) “DIY new civics”.

In light of the general multi-stakeholder characteristics of Media Architecture as well as the participatory developments described above, the methods framework is suggested to incorporate specific design tools for stakeholder inclusion, which are outlined in the following table:

79 <http://okfnlabs.org>, part of Open Knowledge International, a non-profit network promoting openness and civic empowerment through open data and technologies.

	Living Database (see 3.5.5)	WS Session: Ideation & Sketching (see 3.5.3)	WS Session: Storyframing & Narration (see 3.5.3)
Usage	<p>Browsing the visual project archive for collaborative ideation and annotation</p> <p>Editing and adding to the database as participatory action</p>	<p>Materialising individual ideas and perspectives using visual sketching and collaborative collages</p> <p>Engaging with external thinking perspectives through role play/rotation system</p>	<p>Exchange of individual ideation through visual language. Crystallising into collective and integrative concept</p>
Aim	Observation	Conceptualisation	Conceptualisation

Table 4: Active inclusion stage: Overview of suggested tools, usage and aims

A Framework for Envisioning and Provoking

An exchange of individual concepts and repertoires in a conversation builds on individual perspectives. The more these perspectives contrast, the higher the potential to challenge existing individual concepts and related reasoning.

Challenging the status quo of established thinking is an inherent element of any creative process. However, to not become stuck in a confrontational situation, it is necessary to establish a common ground of exchanging sets of ideas and arguments. These can be affirmative in nature as well as optimistic or visionary but can also provoke or fundamentally challenge the foundations. As long as they are understood as tentative thinking models, inviting others to take on the thoughts without risk, they work as a creative tool for developing common ideas.

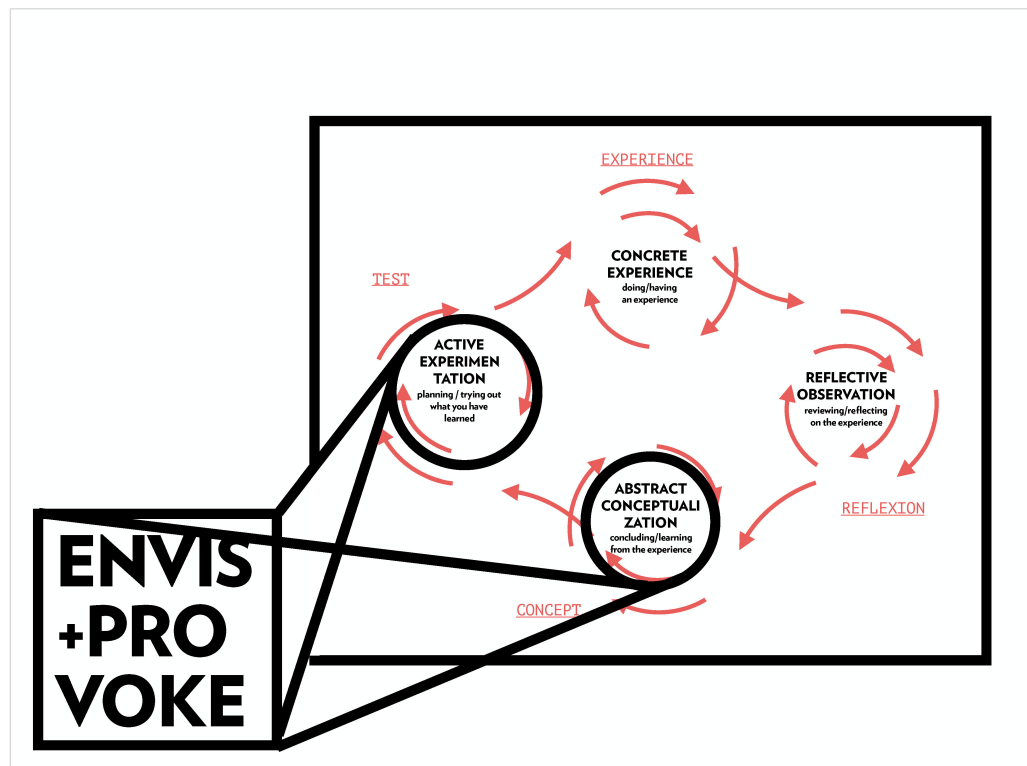


Illustration 4.4: Nested Learning Cycle as a reflective framework for envisioning and provoking feedback.

In a design process for Media Architectural content, visual and interactive modelling can be considered essential tools for establishing a common ground for such thought exchange. Within co-creative multi-stakeholder sessions, modelling processes serve as catalysts for communicating participants' individual repertoires and skills while working on visualisations or prototypes. Participants learn to apply tools to articulate and engage with counter-intuitive situations or alien knowledge (see Section 3.4.1: En

tering Thresholds). In building visualisation prototypes or interactive simulations of their suggested ideas, they learn to read each other's perspectives and competences while subtly extending their own threshold knowledge.

We thus propose including workshop tools for interactive sketching and lo-fi prototyping as vehicles of quick but significant envisioning of individual ideas and their consequences. As tools for envisioning and provoking troublesome knowledge exchange, they add to Kolb's phases of *Abstract Conceptualisation* and *Active Experimentation*.

Tool	Collaborative Session (see 3.5.3)	Collaborative Session (see 3.5.3)	Living Database (see 3.5.5)
Usage	Lo Fi prototyping and creating situations of experience Digital preset software patches and projection mapping (vvvv, vj tools)	For sketching and visualising propositions and feedback	For comparison and contextualisation
Aim	Experimentation	Experimentation, Conceptualisation	Conceptualisation

Table 5: Stage of envisioning/provoking: Overview of suggested tools, usage and aims

A Framework for Assessment and Documentation

In his systemic approach to conversation and learning, Pask referred to practical “debugging” activities through making and executing as essential elements of a functioning conversational system (Pask 1980). The sub-process of debugging based on fast but shared testing of visuals or lo-fi prototypes thus leads to the development of a common concept of an initially vague idea space.

The stage of active experimentation in the circular nested learning model thus serves as a phase of making and debugging particular stages of individual ideas and their materialisation. In documenting the concrete experiences others have with these interim-results, a continued re-evaluation of these individual experiences feeds back into the concrete debugging and prototyping for the Media Architectural situation. In this sense, it becomes part of the process of engaging with “alien knowledge” spaces (see 3.4.1 Making Sense of Experience).

While this actual experience with holistic understanding cannot be designed or thus

evaluated directly, analysis methods from human-centred design can act as helpful tools for evaluation. Continued “qualitative probing” is thus suggested as an inherent assessment of early-stage prototypes and visualisations (see 3.5.3 Evaluation).

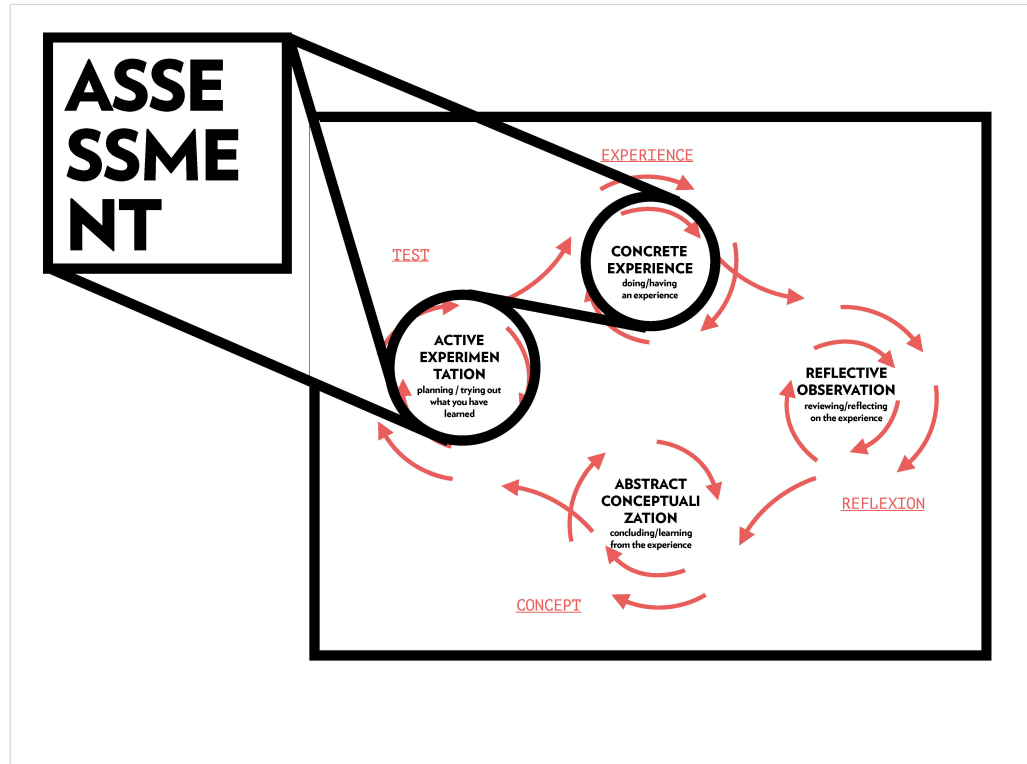


Illustration 4.5: Nested Learning Cycle as a reflective framework for argumentation/documentation.

Depending on the in-situ setting of the situation for which a conceptual design is intended, individual emphasis can be put on the diverse compounds that comprise an experience, such as cognitive engagement (content relevance, expectations, needs), activity (usage and active contributions to the content), emotional response (surprise-factor, well-being, fun) and aesthetics (in relation to spatial context, users and participation) (McCarthy & Wright 2004). These can be traced through combined short interview/usage observations and may be already influential on the conceptual prototyping level. In the overall nested learning cycle visualisation presented above, this process of probing is a recurrent element when advancing through the cascading circular system.

Referring to a methods framework supporting experiential probing, we suggest a range of tools for documenting experiments and experiences. They are applicable as instruments building on procedures of active experimentation but also encourage comparative iteration and reflection.

Tool	Collaborative Session: Fast-forward Testing (3.5.3)	Visual Schemas (3.5.2)	Living Database (3.5.5)
Usage	Testing individual experiences of prototypes and feedback integration of externals	For visually documenting workshop methods and action	Evaluation and interpolation of experiments against researched practice context
Aim	Active Experimentation Concrete Experience	Active Experimentation	Concrete Experience

Table 6: Assessment and documentation stage: Overview of suggested tools, usage and aims

4.3 Tool as Outcome

The previously described structure for a conceptual design process in Media Architecture is the conceptual basis for the proposed outcome of this research process. However, several of the proposed steps for self-reflective contextualisation and design conception are themselves rooted in the structure of the very research process itself.

Apart from learning about multi-faceted perspectives on a design problem through action and interaction, for instance, in design workshops as discussed in Section 3.5, this research additionally suggests that it is also relevant to emphasise self-reflective design activity as a procedure creating its own tools for generating conceptual design propositions. This essentially constructivist perception of knowledge acquisition in essence suggests that knowledge is compiled through human-made constructions. These constructions also include instances of designed artefacts from researchers' own process and how they transcended from tools for researching the Media Architectural design context to tools for a conceptual design process.

4.3.1 Constructing Knowledge through Action

From a pragmatic perspective on learning, the process of acquiring knowledge is an amalgam of objects, thoughts, artefacts and principles that either enable or affect taking action (Dewey 2008, p.145,147). In the tradition of Dewey's learning-by-doing approach, Kivinen and Ristela, for instance, pointed out the role of language as a tool for action. "In essence it is about the learner learning to think or speak in a new way, learning how to use appropriate descriptions for new kinds of needs. This way, in the process of thinking and communicating with other people, we learn how to coordinate action in an appropriate way" (Kivinen & Ristela 2003, p.373).

The practice-led nature of this research raises the issue of thinking and communicating through actions. In reference to McCarthy and Wright and again Dewey, the meaning of experience as an aesthetic parameter for understanding spatial situations and stages of engagement has been discussed from an early stage in this thesis (see Section 2.3). Making sense of space as a multi-faceted activity, including technological, visual, spatial, temporal and social parameters, is ultimately a constructivist approach to the experiential phenomenon of Media Architecture.

On a second level, this research project itself is structured as a process of using experiential qualities of action as a research tool. Applying phases of design action throughout the theoretical research, the generated design artefacts themselves become *objects of* as well as *tools for* engagement with the subject matter of Media Architectural design. The MAA database as an iteratively changing archive of practice becomes a tool to apply interactive prototyping as a sandbox for findings from contextual theory. Visualised schematic abstractions of relations between contextual fields of theory or visual analyses of potential research processes are used as design research methods to shape the process of knowledge acquisition and creative reflection during the research.

However, as the research evolved, it became clear that the design tools initially applied as an internal study process could themselves form a potential outcome to be applied in practice-led reflective design as proposed in the following sections. The idea here is to move away from the typical notion of “tool for result” to an extended conceptual methodology leveraging both “tool and result”. In the words of Lois Holzman, the practice method “creates the object of knowledge simultaneously with creating the tool by which that knowledge might be known. Tool and result come into existence together; their relationship is one of dialectical unity, rather than instrumental duality” (Newman & Holzman 2006, p.52). This notion of Schönian “design doing” is able to construct and nurture an understanding of the Media Architectural experience through self-reflective action. At the same time, it enables the integration of possibly contrasting realistic articulations of implicit/tacit knowing in stakeholder perspectives into an inclusive experiential design approach for Media Architecture.

4.3.2 A Framework for Ownership

Based on the requirements formulated in 4.2.2, we propose an inclusive design approach, extending the understanding of the participatory design process as a process of learning and informing (about situational context, stakeholders, creative potentials and technology, among other topics) to a continuous process of developing sustained creative ownership among stakeholders. Ownership, as Pierce et al. noted, “is grounded in a general motivation to be efficacious in relation to one’s environment” (Pierce et al. 2003, p.84). It emerges from a basic need to have a place in the world. A key characteristic for sustained involvement and ownership is thus the notion of having an impact. It “helps people come to define themselves, express their self-identity to others and maintain the continuity of the self across time” (Pierce et al. 2003, p.84). One could say that the development of a sense of ownership depends on the degree of relevance a subject has to an individual. Light et al., however, argued that in an in-

clusive design process, “it is not enough that beneficiaries are part of the process: the process must enable them to take action and influence the design” (Light et al. 2013, p.91).

Methods of coordination and creative innovation in collaborative teams afford a flexible, system-based design environment, rather than being tailored to specific projects or products (Thackara 2005). Analogue to other structured forms of design support in interaction design (Krippendorff 2006; Sharp et al. 2007; Thackara 2005), a method toolbox approach must incorporate the following characteristics:

1. *Framework*: As a framework, it should not prescribe and instead support reflection and decision making. Managing complex processes is about establishing a common vision among collaborators.
2. *Precise and simple tools*: These include collaborative techniques that are easy to set up and apply.
3. *Individual concepts*: A workshop setup allows flexibility in creatively applying “concepts that are intriguing and open for interpretation and reflection on how they can be used” (Stolterman 2008).
4. *High-level theoretical and/or philosophical ideas*: Nourishing reflective thinking requires not only a process of providing tools for practical action but also approaches that expand design thinking to a higher level of cross-linked reasoning, without prescribing design action.

This research aims to develop a concept that can be used as an intellectual tool in the planning and development of a design process. Rather than providing a set of guidelines and prescriptions, the toolset should support participants as well as designers, “preparing” them for action instead of “guiding” them in action (Stolterman 2008; Schön 1983).

A critical component of any framework aimed at participation and ownership is its capability to allow people autonomy to develop and apply their own sets of expertise within the process. Specifically, in loose interest groups (i.e., groups that are not necessarily involved due to professional dependencies only but mainly out of personal interest) individual motivation is a key component for long-term engagement. In this case, ownership is not a static phenomenon. From the view of Light et al. (2013), it dynamically moves across stakeholders as well as back and forth between initiative actions and efficacy. According to these authors, three major experiences evoke

ownership—*controlling the ownership target, coming to know the target intimately* and, finally, *investing the self into the target*—are thus tied to things. This could be observed, for instance, during the collaborative multidisciplinary workshop (Section 3.5.3), where transitions of individual ownership of activities and ideas between group members constantly took place and were facilitated by methods such as collaborative sketching and fast prototyping. Eventually, these interactions led participants to invest themselves in and relate to the outcomes as “their” project, for instance, in the “motion tracking group”. Additionally, Wilkie’s description of “enthusing” model-making (see 3.2.2) helped in developing an individual bond to the workshop outcomes.

Based on these insights of dynamic ownership, we propose a methodological integration of procedural tools for ownership into a conceptual design framework. To evoke ownership, the tools should be targeted to generate situations of the following:

1. *Meaningfulness*: The methods framework should allow for reflection of the meaning of the project in terms of participants’ lives and how they are individually affected. This can be based on either their direct personal or professional involvement in the project or it can rely on a secondary acquisition of in-depth knowledge about the project outset. Initial data sourcing through a project database, for instance, allows for reflections on the individual and collective meaning of a project based on descriptions, categorisations and mapping. Adding information to the database and editing it is an act of individual involvement as well as a process for acquiring and extending knowledge about the subject matter at hand.
2. *Identity*: The methodological approach needs to provide options for participants to define and redefine the fundamental basis of the project brief. To do this, professionals and stakeholders must be able to switch active and passive roles during process. In a multi-stakeholder setup with diverging professional and individual perspectives, ideation methods such as the rotational thinking-hat tool applied in the Aarhus workshop allow switching of individual roles in a project team constellation.
3. *Responsibility*: Consequentially, the methods should encourage participants to take concrete action based on their individual skills, interests and expertise. Through these activities, individuals link themselves to representational roles for further engagement. A prototyping stage providing access to lo-fi design tools for exploration and refinement is a quick way to bring collective

ideas into existence. Additionally, it creates opportunities for participants to identify with a specific aspect of a fictional concept through manually applying their individual knowledge and skills.

4. *Efficacy and Control:* At all times, the framework methods should be geared toward establishing an atmosphere of control over the project outcome. A system of action and testing needs to support the participants in making or overriding decisions based on individual, informed experimentation, identification or meaning. Action-oriented ideation methods in this respect are ideal tools as they not only allow stakeholders develop an informed understanding of a situation but also lead to a language of practical manifestation. Sketches or prototypes are valuable elements of reasoning and influence conceptual design decisions.

When integrated with the list of tools proposed in Section 4.2.2, a practical design methods framework intends to address the above-listed situational characteristics to generate a strategic approach of ownership through design (see 4.4).

4.3.3 Related Existing Research

Coming from a communication design perspective, the proposition of this thesis to develop a self-reflective method framework for conceptual design phases in Media Architecture is surrounded by approaches from a range of other disciplines. In recent years, endeavours from media/urban informatics, architecture and participatory urban interaction have been published in efforts to develop toolkits for Media Architecture design. Research initiatives at institutions such as *CAVI* at Aarhus University, the *QUT Urban Informatics Research Lab* and *UCL Bartlett* are prominent drivers in analysing and prototyping Media Architecture and related design principles. These institutions have developed spatial communication toolkits and examined current challenges for their design and implementation.

The contextual influences for this thesis can be grouped into four areas of research: digital participation and community engagement, urban prototyping and design toolkits, forms of mediatization in architecture, and procedural design reflection.

Digital participation and community engagement

Caldwell and Foth discussed the transferability of general do-it-yourself approaches and methodologies of hacking to urban digital media to stimulate community engagement (Caldwell & Foth 2014). They asked if open source approaches as phenomena in other domains (e.g., technical, spatial, social) can encourage DIY and DIWO (do-it-with-others) as suitable practices not only for participation but also for instigation of real change. This follows a sort of meta design approach seeking effecting change through the empowerment of others (see e.g. Awan et al. 2013). In analysing tendencies of open collaboration and access in current projects, Caldwell and Foth highlighted DIY strategies as going beyond artefacts and materiality in promoting crafting as experience and knowledge exchange. Tinkering platforms and fablabs become spaces for not only personal creativity but also collaboration and grassroots innovation. Similar to spatial DIY placemaking activities, where bottom-up processes are redefining public space through civic engagement, open and active DIY participation create feelings of empowerment and ownership of physical objects and space. In this respect, technical and spatial DIY becomes a social phenomenon, encouraging participation, diversification and social intervention.

In this respect, the notion of DIY as a question of citizens' control relates to aspects of capacity building and ownership in Media Architecture (see 3.4.2). For instance, the notion of ownership can relate to Media Architecture outcomes that are designed for open access (i.e., through plug-and-play systems or tangible interfaces between users and a building). On the other hand, this also means taking into account the various types of "citymakers" for the process itself, such as planning authorities, councils, architects, designers, owners, developers and city inhabitants, and providing and creating open platforms for bottom-up experimentation and collaboration.

Urban prototyping and design toolkits

Tying into the DIY approach outlined by Caldwell and Foth, several research strands currently focus on urban interaction design and placemaking processes through design and prototyping toolkits. Here, the early inclusion of a broader variety of citymakers is again a driving intention. However, these toolkits are not necessarily meant to be prescriptive methods for an ideal process but may provide opportunities for self-evaluation and refinement of stakeholder positions or projected outcomes.

Korsgaard and Brynskov (2014) described urban prototyping not as a participatory process geared toward a preferably broad range of stakeholders but as intentionally targeted at planning systems, authorities and policy makers. Based on their experi-

ences from a participatory Media Architecture project with the city of Aarhus, they found that strategies for community engagement through open access and public data linked with the project actually lead to more discussions within the administration than with the public. The role of the Media Architectural installation itself was more of a “strategy for prototyping or probing into the digital maturity, policy and notions of transparency at the scale of a city” (Korsgaard & Brynskov 2014, p.22). They instead proposed a service design orientation for conceptual design processes in Media Architecture. As policy makers are “gatekeepers” in public-oriented projects (Fatah gen Schieck 2009), they suggested that design efforts should potentially target communication policies, challenges and implications rather than technology, usage, usability and aesthetics of Media Architecture. They introduced the concept of “provotypes” as a service design-oriented tool to elicit new forms of touchpoints and service options through the use of critical and speculative design research methods (see also 2.3.3)

Concentrating on interactive design situations in urban media façades, Peter Dalsgaard and Kim Halskov identified eight main challenges of designing for Media Architecture (Dalsgaard & Halskov 2010). Based on earlier systematic approaches in interaction design such as Jonathan Grudin’s research into computational support of cooperative work (Grudin 1994) or Susanne Bødker’s notes on emotional and experiential aspects of human-computer interaction in public and private spaces (Bødker 2006), their work reflects the specificity of the urban setting for interaction design, such as spatial circumstances or socio-cultural practices. The issues identified as relevant for a design framework range from new forms of *interfaces* in urban settings and their *integration* into existing physical surroundings to the demand for *robustness* in, for instance, alternating weather conditions. The development of *content* that fits format and interactions is significant, as well as exploring, negotiating and balancing its relevance for *stakeholders* and their interests, especially in locations where a diversity of communicative or interactive *situations* occur and overlap. The application of new technologies in urban, interactive situations can disrupt and transform *social relations*, potentially allowing *emerging usage* and unintended outcomes through appropriation and adaption by the public. As an overarching challenge in urban interaction design, Dalsgaard and Halskov articulated the fact that many locations consist of multiple intertwined and co-existing situations and thus demand a more extensive and holistically planned initial exploration and research phase than other interactive domains.

Behrens et al. introduced Media Architectural interfaces (MAI) as a novel domain for interaction design (Behrens et al. 2015). Synthesising the situated and shared situations of HCI on large-scale as well as personal devices, the term describes an eco-

logy of tangible and non-tangible interfaces. Their approach is based on four notions of space or frameworks considered to be relevant in designing Media Architectural displays: *Awareness Space* is a concept identifying specific levels of individual conscious interaction with a display in public space. The notion of *Actor Space* differentiates between the passive, active and performative roles people take on when in the vicinity of an interactive installation. *Action Space* describes the conceptual framework of transitioning through various phases of engagement with MAI. Finally, the notion of *Physical Space* as a relevant category for urban HCI highlights the physical circumstances facilitating or preventing certain modes of interaction. Analysing the multi-layered interaction frameworks of two installation examples, a taxonomy is developed to collect commonalities and inform novel and sustainable approaches in MAI.

There are also propositions for prototyping tools in Media Architecture that focus on a more technically oriented exploration of design ideas. Here, Wiethoff's research into tangible mobile prototyping should be mentioned, specifically his prototyping interfaces framework for Media Architectural façades (Wiethoff & Gehring 2012) (Wiethoff et al. 2014). The scope of this work includes pre-test early explorations of interactions with media façades and essentially follows a user-centred design approach over five project phases, from key data collection to evaluation. The described framework applies user research methods (interviews and observations), lo-fidelity prototypes (paper-wireframes) and digital high-fidelity prototypes such as the "Lightbox", a mobile custom made display integrating an LED grid and smartphone connectivity for interaction testing with mobile devices.

One of the most current contributions to the field, Niels Wouters (2016) proposed design strategies for the "social and architectural relevance" of Media Architecture. The work demonstrates Media Architecture as a "sociable tool" providing relevance to its context. Wouters considered four angles of contextualisation: firstly, by enabling *stakeholder collaboration* in design processes; secondly, by applying *locally relevant information* rooted in community identity; thirdly, by testing the provision of *design characteristics for engagement* considered suitable to yield public interaction; and lastly, by applying strategies to optimise the *physical integration* of Media Architecture within its immediate architectural surroundings. In contrast to other mentioned approaches, Wouters is extending combinations of technical prototyping and interaction design principles with inclusive procedures such as stakeholder involvement and sourcing local community identity.

Mediatiation and physical environment

On a theoretical level, the meta process of mediatiation as described by Krotz (2007) provides interesting insights for the development of a conceptual design framework for Media Architecture. The radical pervasiveness of media means that they are no longer dedicated devices, but integrated into the physical and digital fabric of everyday life. They no longer only *mediate* but, in Kittler's words, determine our situation (Kittler 1999). They define our awareness of time, "shape our attentions and emotions and provide us with the means for forming and expressing thought itself. Media, in slightly different terms, become epistemology: the grounds for knowledge and knowing itself" (Friesen & Hug 2009, p.64).

Miller discussed this notion of media as embedded in material objects, subjects and environments and how mediated objects act as "distributed minds" of people and are able to influence others (Miller 2014). As humans and the use of material tools are inextricably linked to develop individual understanding and expression in the world, he argued that media objects again can be intimate objects of self-identity and an extension of the self. Such distributed minds are evident not only in materialised interfaces in physical environments (e.g. the IoT) but also in cognitive distributed processes such as prototyping. Here, the quality of "making" is central to finding common ground for connection and exchange with others.

Focusing on tendencies of mediation, specifically its role in design processes in architecture, Lorenz and Staub (2011) highlighted that its potential "unfolds when the virtual and the real merge" (Lorenz 2011, p.16). Mediation as design and all aspects of its communication and representation are understood as a procedure that becomes a core part of an architectural work. Based on Latour's "Dingpolitik", Lorenz claims that "each step of the design is always a project in itself, judged not by its eventual product, but by its ability to initiate its own next transformation" (Lorenz 2011, p.13). Similar to an iterative human-centred design and prototyping approach, he understands the designed artefact as a tool for negotiation resulting in (in the case of architecture) spatial transformation. The architectural impetus lies on the actual effect in spatial environment rather than solely on the built form.

Procedural design reflection

The above-mentioned approaches to conceptual or practical frameworks touch on alternative ways of structuring and designing the design process itself. Frequently, the proposed modes of contextual research and concept design borrow methodologies from interaction design or user-centred design and apply them in the context of urban media integration.

Korsgaard and Brynskov discussed urban interactive prototyping as a reflective tool to elicit internal debate in multi-stakeholder projects. They adopted a service design perspective applying urban prototyping as a tool to verify and discuss the role of touchpoints for engagement in an urban setting (Korsgaard & Brynskov 2014). From a similar procedural perspective, Dalsgaard et al. looked at visual communication design artefacts, specifically visual mapping as a tool for design reflection in a multidisciplinary design process (Dalsgaard et al. 2009). Based on an earlier approach by Lanzara and Matthiassen (1984) and focusing on a design research perspective rather than design practice, they share Schön's notion of reflection on action, but from a researcher's view. They proposed three types of maps that correspond with the design phases and can be used to document them visually. An *overview* map type provides a comprehensive overview of inspirational sources and the emergence of ideas throughout the process. Over the course of time, it develops from collection to analytical tool. A second map type called the *strand* focuses on transformations and different materialisations of the main emerging idea. It captures the emergence of an initial vague conceptual idea to a prototype/product through various stages of transformation and alternation. A third map type is *focal* maps. These concentrate on the refinement of design details and use descriptive as well as reflective elements in mapping design experiments within a strand. Although applying a high level of abstraction and time-consuming to maintain throughout the process, the maps consecutively unfold the directions and details of rich design situations to the participating team as well as to potential external stakeholders. The mapping process allows the interrelation of inspirational sources, materials and experiments to become apparent.

The above-mentioned four research strands underline a general growing interest in urban prototyping as a multi-stakeholder activity leaning on digital, user-centred and participatory activities. This generates a novel, multi-faceted field of action for HCD design that requires a high level of spatial and socio-cultural contextualisation. The design process in such a context is thus as important as its potential outcomes. A recurring theme touching on all four areas is the aim of involving stakeholders over the lifespan of an urban or Media Architectural design project. Thus, one could argue that

the experience of Media Architecture needs to begin in its ideation phase, long before anything is actually installed or set up as a functional prototype on a building façade. This is where collaborative experiences should aim at generating inclusive and participatory situations as a driver for a sustained experience of spatial ownership.

The following section relates these considerations from secondary literature research in the field to findings from workshop and interview studies and transfers them to a practical toolset of visual design methods for Media Architecture.

4.4 Reflection through Design Practice

4.4.1 MAA Archive and Classification System

At the outset of this thesis, several connotations of media and space were presented in an effort to initially frame relevant aspects for a contextual understanding of Media Architecture. Media space has been dissected as a conceptual construct of the *built environment*, *visual space* and iconographic characteristics of architecture, human (inter-)activity as an essential component of *social space*, extending to digital and mobile interactivity in the notion of *networked space* (see Section 2.2). Experiencing media and space was discussed as an interrelated process generally involving the user, his actions and interactions through the medium and context in which involvement takes place, be it spatial, temporal or social. All these aspects are relevant to any consideration of the various interdisciplinary strands of Media Architecture as a research area. Over several stages of practical elaboration, they have been proven to have a significant structure for archiving and analysing examples of Media Architectural practice.

Media Architecture Taxonomy

In comparison to existing definitions and classification approaches to Media Architecture that have been presented (see Section 2.5.2), structural similarities were found at the root of most approaches, regardless of specific disciplinary angles such as interface design, technical lighting design or urban studies.

In the following, schematic visualisations illustrate the taxonomy structure applied in the MAA database. The schematic graphics visualise the condensation of research sources from the field into the definition of an overarching taxonomy and related tagging options for Media Architectural projects. The categorisations were derived from an initial literature review and adapted based on the further reflections from practice.

Information on database entries is organised into two sets: the first set queries general project data and technical definitions, and the second set is based on a tagging system structured along the major trajectories of tags related to *content*, *environment* or *people*.

In relation to the general characteristics of a project, there are two tagging options. The general tech typology is aimed at defining the main display technology applied in a project. It is related to the various categorisation efforts by Haeusler, Wahl and Schoch (see 2.5.2) as well as to a later categorisation structure by Caldwell and Foth (2014), which seek to give an indication of the major technological approach undertaken in a project. Possible options differentiate between *illumination grids*, *passive façades*, *on- and back-projections*, *display screens*, kinetic or *mechanical façades* and structural *appropriations* (e.g., window screen grids).

The general project categorisation was derived from the award categories in the MA Biennale⁸⁰ as well as earlier usage types found by Fatah gen. Schieck (2006). The MAB categories consist of five tagging options identifying a Media Architectural installation as *animated architecture*, *spatial media art*, *business & money architecture*, *participatory architecture*, *future trends & prototypes*. The MAB categories are part of an established classification that since 2012 has been shared as a de-facto denominator within the Media Architecture community. They may prove helpful for further comparison and integration within existing research bodies.

The overall tag structure is separated into three main groups defined as *people*, *content*, *environment* in an attempt to enable labelling a Media Architectural installation according to both its relation to and impact on the world.

The first tag group is *people*-oriented, which categorises the way an installation is used, both by the artists or authors bringing it to life as well as its audience and how they make use of the installation in an active or passive way. The definition of usage types in the taxonomy reflects typologies applied and extended in earlier literature, mainly from Sauter (2004). Usage types are defined as either *auto-active*, *re-active*, *interactive* or *participatory* situations. Later sources (Fritsch & Brynskov 2011; Caldwell & Foth 2014) as well as initial research through this thesis (see 2.5.5) suggested the extension of this list toward the inclusion of aspects such as *static*, *communicative* or *performative usage*.

80 See award categories described at <http://mab14.mediaarchitecture.org/awards-jury-criteria/>

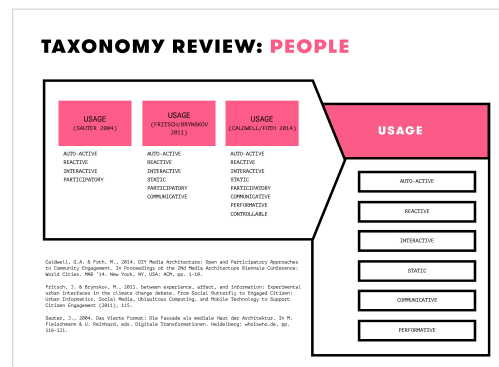


Illustration 4.10: Project data: People-related characteristics: Usage

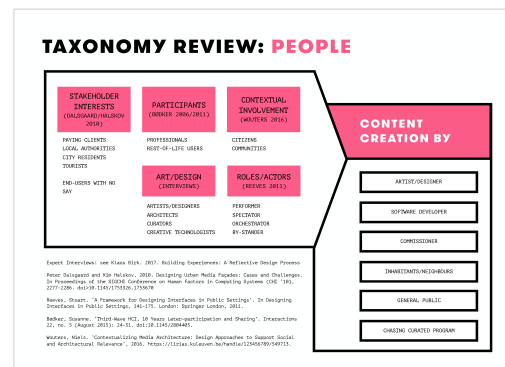


Illustration 4.11: Project data: People-related characteristics: Content creation

In addition to typical use cases of an installation, there is also the possibility to tag a project according to roles of authorship and content creation. Depending on the project and its location or intended usage, this can vary significantly. The related options are derived from general perspectives on professional and non-professional as well as public and private stakeholders (Bødker 2015; Wouters 2016), their specific interests (e.g., in financial, legal or consumer-oriented terms) (Dalsgaard & Halskov 2010), their situated roles (Reeves 2011), and their professional creative capacities (see 2.5.5). The taxonomy differentiates between projects with content that is created and applied by either an external *artist/designer* or, in a few cases, the dual role of designer and *software developer*. Especially in commercial projects, there are cases where the *commissioning party* is responsible for the provision of existing content. Participatory installations or projects with a strong communicative bias tend to include semi-public or public interest groups such as *inhabitants/neighbours* or the *general public* (i.e., passers-by). From the archive, there have also been cases where content is continuously changed and adapted over time through a *curating instance* such as invited artists or agencies.

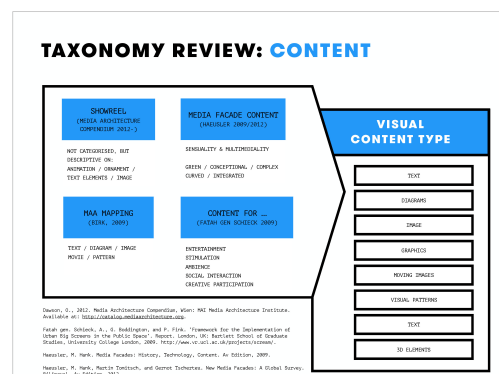


Illustration 4.12: Project data: Content-related characteristics: Visual content type

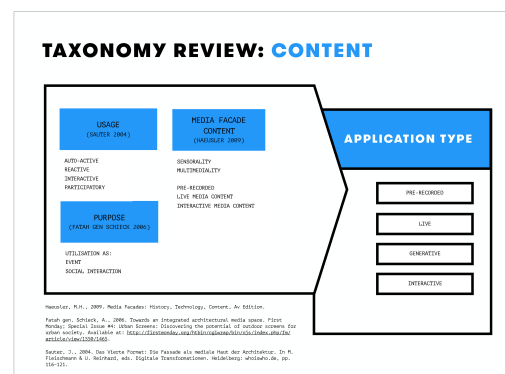


Illustration 4.13: Project data: Content-related characteristics: Application type

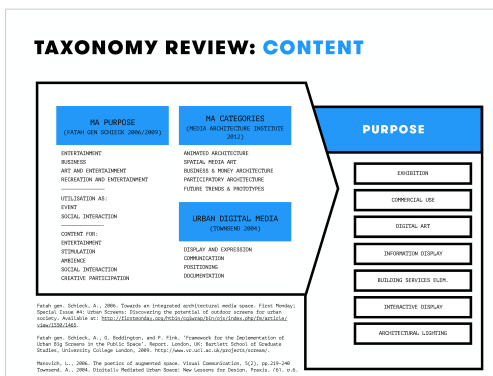


Illustration 4.14: Project data: Content-related characteristics: Main Purpose

The second group of tags is concerned with aspects of the content that is audio-visually communicated in a Media Architectural installation. Here, tags can be applied in relation to three qualities: *content type*, *application type* and *purpose*.

The *content-type* tag defines the particular kind of typical visual elements usually applied within the described project, ranging from *text*, *image*, *diagrammatic content*, *moving images*, *pattern structures* to *3D elements* (Haeusler 2009; Fatah gen. Schieck et al. 2009; Tscherteu & Leeb 2012) (see also 2.5.3: Illustration 2.9). An additional tag – *application type* – refers to how these content types are integrated on a dynamic level. This can include either *pre-recorded*, *live*, *generative* or *interactive* content elements (Sauter 2004). Often, these rather structural content qualities depend directly on the specific spatial or interactive circumstances for which the Media Architectural installation is designed. Based on Townsend (2004), Fatah gen. Schieck et al. (2009) and Tscherteu & Leeb (2012), the contextual *purpose* of the design can be defined in relation to its incentive as a temporary event or more permanent situation of interaction. The tag list here ranges from *exhibition purposes*, *commercial usage*, *digital art*, *informative usage*, *interactive display*, installations as digital *building services/systems* element, to projects that are integrated into an overall *architectural lighting* concept.

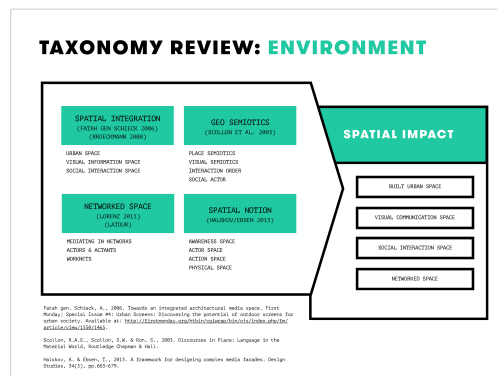


Illustration 4.15: Project data: Environment-related characteristics: Spatial impact

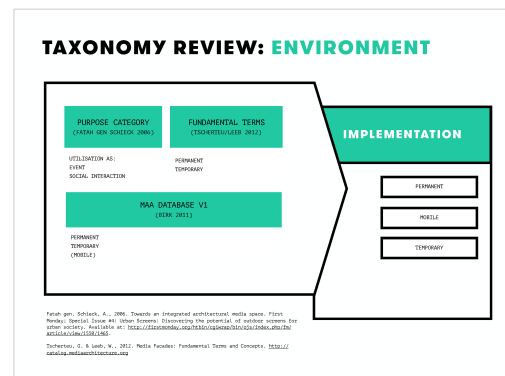


Illustration 4.16: Project data: Environment-related characteristics: Implementation

The third top-level group of tags is related to the way the individual Media Architecture installation project influences its immediate spatial *environment*. The two sets of tags within this group enable a database editor to attribute tags defining the kind of *implementation* i.e., (temporary, permanent or mobile). On one hand, this follows Fatah's purpose categories describing the utilisation of media façades as either event-oriented or as an opportunity for social interaction (Fatah gen. Schieck 2006). On the other hand, it adds to Tschertou and Leeb's basic definition by introducing a *mobile* Media Architectural interface option, as observed in earlier collections of the MAA database (see 2.5.4: Illustration 2.12).

Additionally, within the *environment* tag group, it is possible to indicate the overall *spatial impact* of the installation. This option is based on the notion of space as a multi-facetted entity of built, visual, social and networked space as discussed in Section 2.2 alongside the concepts of geo-semiotics (Scollon & Scollon 2003) and networked mediation of space (see 4.3.3) and early urban interaction research on spatial media façade integration (Fatah gen. Schieck 2006; Broeckmann 2000). *Spatial impact* can be tagged in relation to a project's influence on the physical *built urban space* in which it is located and in terms of its visual prominence and impact within the immediate *visual communication space*. In particular, works that include interactive touch points or situations of user involvement, either with the installation itself or in a way that promotes interaction among by-standers or inhabitants, can be tagged as affecting the immediate *social interaction space*. Many recent installations are not conceived only as self-contained, geographically local installations; they also allow an exchange with mobile devices, remote homes or even with other connected Media Architecture around the world⁸¹. This presents a remarkably rich addition to the spatial experience of a digitally enhanced local environment, rendering it as an example of *networked space*.

81 See, for example, the Connecting Cities Network. <http://connectingcities.net>

This predefined, overall taxonomy is meant to provide an initial structure for documenting, surveying and understanding the field of Media Architecture projects. As has been shown, the tagging system both references external academic sources discussing the nature and definition of Media Architecture and integrates findings from earlier practical exploration and previous versions of data archived during the course of this research. However, as described in the following sections, the tagging system was designed as an open tool for participation. It is not only meant to document a static overview of projects but intended to grow with the database during its application in workshop environments. Apart from the general specification typology, all tag groups allow multi-selection of tags as well as the creation of additional tags that have not yet been included in the system (see Illustration 4.17). Participants can define and add new tags to be included in the database in a process of reflective observation.

EDIT PROJECT

PROJECT TITLE

DATE
Start Date: End Date:

GENERAL SPECIFICATION
Book Type: Book Category:

LOCATION
Choose Address or Location on Map: ☒

PROJECT IMAGE
Image Link / URL:

PROJECT VIDEO
Youtube / Vimeo Link:

PROJECT WEBSITE
Website Link:

PROJECT DESCRIPTION
Some descriptive information:

SIZE (M2)
20.000

RESOLUTION (PX)
30.000

LUMINANCE
*

TAGS

CONTENT

CONTENT TYPE
Text ☐ Diagram ☐ Image ☐ Video ☐ Pattern ☐ Sound ☐ Other ☐

APPLICATION TYPE
Pre-Recorded ☐ Generative ☐ Live ☐ Interactive ☐

PURPOSE
Commercial ☐ Info ☐ Building Sign ☐ Art ☐ Interaction ☐ Exhibition ☐

ENVIRONMENT

IMPLEMENTATION
Permanent ☐ Temporary ☐ Mobile ☐

SPATIAL IMPACT
Built Urban Space ☐ Visual Information Space ☐ Social Interaction Space ☐

PEOPLE

TYPE OF USE
Autonomous ☐ Relative ☐ Interactive ☐ Positive ☐

CONTENT CURATION BY
Artist/Designer ☐ Software Developer ☐ Hardware Developer ☐ Inhabitants ☐ Architect ☐ Commissioner ☐ Artistic Curator ☐ Public ☐ Other ☐

BUILDING PROFILE

COMMISSIONED BY
Wong Kong Tourism Board ☐ Web Investment ☐ Museum of Modern Art ☐ Museum of Contemporary Art ☐ Museum of Art ☐ Museum of Design ☐ Museum of Architecture ☐ Museum of Urban Planning ☐ Museum of Urban Design ☐ Museum of Urban Development ☐ Museum of Urban Environment ☐ Museum of Urban Infrastructure ☐ Museum of Urban Landscape ☐ Museum of Urban Life ☐ Museum of Urban Culture ☐ Museum of Urban History ☐ Museum of Urban Memory ☐ Museum of Urban Identity ☐ Museum of Urban Character ☐ Museum of Urban Spirit ☐ Museum of Urban Soul ☐ Museum of Urban Heart ☐ Museum of Urban Mind ☐ Museum of Urban Soul ☐ Museum of Urban Heart ☐ Museum of Urban Mind ☐

ARCHITECTURE BY
Wong Kong Tourism Board ☐ Web Investment ☐ Museum of Modern Art ☐ Museum of Contemporary Art ☐ Museum of Art ☐ Museum of Design ☐ Museum of Architecture ☐ Museum of Urban Planning ☐ Museum of Urban Design ☐ Museum of Urban Development ☐ Museum of Urban Environment ☐ Museum of Urban Infrastructure ☐ Museum of Urban Landscape ☐ Museum of Urban Life ☐ Museum of Urban Culture ☐ Museum of Urban History ☐ Museum of Urban Memory ☐ Museum of Urban Identity ☐ Museum of Urban Character ☐ Museum of Urban Spirit ☐ Museum of Urban Soul ☐ Museum of Urban Heart ☐ Museum of Urban Mind ☐

FAÇADE IMPLEMENTATION
Wong Kong Tourism Board ☐ Web Investment ☐ Museum of Modern Art ☐ Museum of Contemporary Art ☐ Museum of Art ☐ Museum of Design ☐ Museum of Architecture ☐ Museum of Urban Planning ☐ Museum of Urban Design ☐ Museum of Urban Development ☐ Museum of Urban Environment ☐ Museum of Urban Infrastructure ☐ Museum of Urban Landscape ☐ Museum of Urban Life ☐ Museum of Urban Culture ☐ Museum of Urban History ☐ Museum of Urban Memory ☐ Museum of Urban Identity ☐ Museum of Urban Character ☐ Museum of Urban Spirit ☐ Museum of Urban Soul ☐ Museum of Urban Heart ☐ Museum of Urban Mind ☐

SOFTWARE BY
Wong Kong Tourism Board ☐ Web Investment ☐ Museum of Modern Art ☐ Museum of Contemporary Art ☐ Museum of Art ☐ Museum of Design ☐ Museum of Architecture ☐ Museum of Urban Planning ☐ Museum of Urban Design ☐ Museum of Urban Development ☐ Museum of Urban Environment ☐ Museum of Urban Infrastructure ☐ Museum of Urban Landscape ☐ Museum of Urban Life ☐ Museum of Urban Culture ☐ Museum of Urban History ☐ Museum of Urban Memory ☐ Museum of Urban Identity ☐ Museum of Urban Character ☐ Museum of Urban Spirit ☐ Museum of Urban Soul ☐ Museum of Urban Heart ☐ Museum of Urban Mind ☐

CREDITS
Wong Kong Tourism Board ☐ Web Investment ☐ Museum of Modern Art ☐ Museum of Contemporary Art ☐ Museum of Art ☐ Museum of Design ☐ Museum of Architecture ☐ Museum of Urban Planning ☐ Museum of Urban Design ☐ Museum of Urban Development ☐ Museum of Urban Environment ☐ Museum of Urban Infrastructure ☐ Museum of Urban Landscape ☐ Museum of Urban Life ☐ Museum of Urban Culture ☐ Museum of Urban History ☐ Museum of Urban Memory ☐ Museum of Urban Identity ☐ Museum of Urban Character ☐ Museum of Urban Spirit ☐ Museum of Urban Soul ☐ Museum of Urban Heart ☐ Museum of Urban Mind ☐

DISCARD **UPDATE**

Illustration 4.17: MAA: Project editing screen with input fields for project data and tagging options – based on the developed Media Architecture taxonomy

The MAA Database

A project database of Media Architecture was developed as a core element in the design of the toolkit. The database originated from a research archive developed during the course of this doctoral research to assist in analysing and structuring architectural practice in the field. Later, it also became a tool itself for research and observation within user workshops. It consists of an archive of projects on illuminated and/or digital public information display at architectural scale. It is set up as a web-based application, with access to an online project database provided through various kinds of devices with internet access. The database originally evolved from the initial research process in the field, both in secondary literature as well as through related first-hand experiences.

Technical Description

The first instance of this database was built by the researcher on the basis of data stored in a Google Spreadsheet. The spreadsheet was linked to an interactive data visualisation framework (*Exhibit 2.0*, see 2.5.4) and adapted for individual visualisation purposes. *Exhibit* provided a simple, powerful and publicly accessible tool for web-based faceted filtering and searching the data source/spreadsheet. However, as a project, active development was discontinued in 2012. The database was quite specific in its technical requirements but had only limited compatibility with web standards, leaving it to malfunction on modern web browsers. Additional integrations such as user management and dedicated visualisations were not intended. This led to the researcher's decision to develop a new, more functional prototype of the archive. The current version uses a more future-proof database/front-end development stack based on the developer tools *MongoDB*, *Express*, *Angular*, and *Node* (*MEAN stack*)⁸². Fully built on JavaScript, this technical structure allows a lean, flexible use of mobile interface frameworks such as *Bootstrap*⁸³ for multi-device interfaces and *D3*⁸⁴ for svg-based, data-driven visualisations. The database is thus usable on any mobile device using a current web browser. A user administration function was added to enable live contribution to the database during workshop sessions. A functional prototype using this technical stack was developed by the author on the basis of a local server application. For detailed adaptations of interface functionalities, including database/tag systematics and basic user administration, occasional support was provided by a *Node/JavaScript* front-end developer⁸⁵. However, for demonstration

82 MEAN stack development framework: <http://www.meanjs.org>

83 Twitter Bootstrap: <http://getbootstrap.com/2.3.2/>

84 D3 Javascript Visualisation Library: <https://d3js.org>

85 Provided through collaboration with Intuity Media Lab GmbH, Stuttgart.

purposes, a preliminary visual interface prototype is presented, based on a fixed set of project entries and functionalities. This details the intentions of the MAA as a self-descriptive and participatory tool for inquiry, while providing the basic boilerplate for final production as a fully functional digital tool.

Content Description

The content of the database is based on global practice examples and classification typologies from literature in the field. Media Architecture projects from a period ranging from 1910 to 2014 are documented in terms of factual data, such as date of opening and location, information on commissioning parties, project partners involved and technical information such as size, resolution and technologies applied. As an existing entity of data, it also allowed the introduction, combination and testing of ontologies found in literature on Media Architecture and experience design. Categorisations for each project are applied in relation to a general triangular constellation of content, users and spatial context. Information on typical application, usage and content types is included as well as their relation to existing project categorisations and main building purposes. Typical forms of content curation as well as a project's main impact on built, visual and social space are documented (see description in Section 4.4.1: Media Architecture Taxonomy).



Illustration 4.18: MAA interface: Filtering options based on the Media Architecture taxonomy

When applying full-text search as well as faceted browsing approaches combining sets of multiple filters on the project data, the meaning of these categorisations becomes visible in the resulting graphical project overviews and their individual connections or similarities. As a visual approach to designing a meaningful browsing experience through the data, a set of different views was added to the application. These views include a thumbnail list view, a timeline view, a geographic map view and a hierarchical typographic treemap view. These can be applied to any set of filters and their results. Thus, users can browse projects and compare them from a chronological or geographical perspective and gain a visual overview of imagery or weighted representation. A detailed view of an individual project can be invoked from any of these overviews. This view contains more imagery from the individual project, a textual project description, video documentation if applicable as well as a list of related search tags and categories.

Views and Visual Data Queries

In addition to the project database as a project archive for contextual research, a set of interactive visual representations are suggested within its application. These methods serve three main purposes. Visualisation tools assist in documenting individual thinking processes during an experiential contextualisation phase (see 4.2.2). They provide means of triggering further internal ideation, for instance, through visually connecting or rearranging project details, images and sketches (see Error: Reference source not found). And on a third level, they serve as a mediation tool, making individual thinking accessible to others, similar to Pask's "program writing" in conversation theory (Pask 1976) (see 3.4.1). However, this visual mediation allows for collaborative ideation, which in itself is a trigger and leads other participants to build collaboratively on such visual "programs".

The database uses graphical analysis of various data levels and relational information in its project archive. This includes representations of visual appearance (thumbnail-overview), chronology (project timeline) and geographical distribution (project mapping). Additionally, the database applies information design approaches to browsing the archive using graph visualisations. Hierarchical cluster analysis (using interactive treemaps and radial dendrograms) allows participants to relate to a variety of projects' properties and their inherent interdependencies. The potential of these various modes of representation unfolds through interactive options for searching, sorting, filtering and recombining interest criteria. These options allow a playful and informed engagement with the archive, providing a means of testing individual preconceptions and derivations. Using interactive representations, the database becomes an interrogative, visual learning tool. In the practical design application, an interactive tree-

map and a radial map visualisation are used as exemplary visual browsing options for archived projects. These *d3* visualisations were integrated as a proof of concept based on static data.



Illustration 4.19: MAA graphical interface visualisations

The digital MAA evolved from a custom tool supporting the research process for this work. Going through different elaboration stages, it became a helpful visual and interactive approach to combine and test theoretical definitions and practical research. This provided an opportunity for immediate contextual framing of the field for various user groups. As a web-based database, users can access related information on Me-

dia Architecture projects from their own mobile devices anytime and independent of their location. Thus, it is applicable as an in-situ research and contextualisation tool during field trips and in collaborative work sessions.

An Archive for Collaboration

In contrast to the initial research version of the database (see Sections 2.5.4 and 3.5.5), the MAA is intended to become a living archive for further contextual use in co-creative workshop settings. Participants can access the database as users and can add, update or change their own entries. In this respect, the archive becomes a tool for actively involving participants in reflecting on existing practical context and its meaning. This is intended as a form of reflection in action, while an understanding of the practical field, its pitfalls and possibilities is also developed. The use of the database thus becomes an initial tool for community building, as the included user management function allows for contact, engagement and exchange with other participants.

4.4.2 A Conceptual Design Methods Framework

Based on the concept of “shared troublesome knowledge” (4.2.1), a methods framework in the form of a reflective design and research toolkit is presented as practical proposition of this thesis. Using the meta structure of a nested learning cycle approach (4.2.2), participatory design tools for a self-reflective design procedure are presented. These tools evolved from a self-reflective study that included action research and participatory workshop situations using a semi-structured methods approach. A circular model visualises the correlation of individual methods components with particular stages in the proposed framework. The intention is for this framework to be applied as a basic structure for a conceptual design workshop. It is categorising tools for data collection, sketching and prototyping and maps them on specific experiential learning phases. The tools and methods are geared toward collective and participatory action and cover a full iteration of the learning cycle.

The database is predominantly applied in the phases of *Concrete Experience* and *Reflective Observation*. Here, it serves as a data source for investigating the practice of Media Architecture and related contextual information. As a participatory method, editing and adding to the “living database” and its categorisation structure extends in individual experiential procedures. Interactive information visuals and data views are applicable as further tools for investigation and visual reflection.

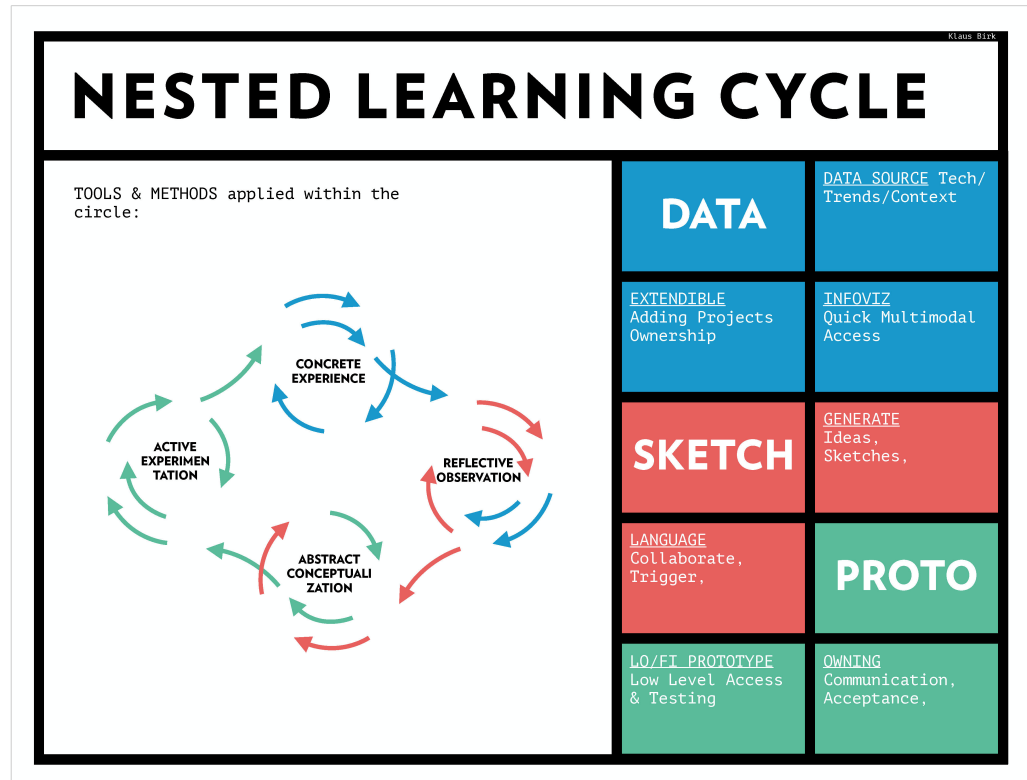


Illustration 4.20: Correlation of the nested learning cycle with methods and tools for collaboration

Visual sketching tools support processes of *Reflective Observation* and *Abstract Conceptualisation*, for instance, through the use of ideation and visual thinking methods and their application as a visual language for collaboration methods. Similarly, visual and interactive prototyping tools are mapped to the phases of *Abstract Conceptualisation* and *Active Experimentation*. Here, visual and interactive prototyping methods extend the collaborative designerly conversation and allow instant assessment of ideas and their experiential qualities. As collaborative action methods, they provide opportunities for individual identification through experience.

The overall framework is targeted at multi-stakeholder groups, including design professionals of various skill levels as well as participants with contextual expertise, such as residents and representatives of city administration or the commissioning party. It is aimed at applying design methods to allow individual articulation and participation through a common (visual and verbal) language repertoire. In light of an understanding of urban Media Architecture as, first and foremost, an experiential phenomenon, the framework is a tool to extend this notion to the design process of Media Architectural situations. Thus, experiencing Media Architecture begins in its own concept phase, in an effort to establish a new perception of civic accessibility, continued participation and ownership of Media Architectural urban spaces.

Workshop Structure

Following the “Tool as Outcome” approach described in Section 4.3 a workshop setting is proposed as a general structural approach for integrating design methods along the nested learning cycle concept, incorporating Kolb’s stages of concrete experience, reflective observation, abstract conceptualisation and active experimentation (Kolb 1983). The structure and tools suggested in the following proposal for a workshop setting for conceptual design approaches to Media Architecture are rooted in the author’s own research workshops (Sections 3.5.3 and 3.5.4) as well as in the related visual prototyping tools applied and described in Section 3.5.2.

The workshop structure consists of three basic phases: A phase of conceptualisation, a phase of ideation and a phase of prototyping. Phase one provides opportunities to aggregate contextual information, both subject-related as well as site-specific. Phase two is concerned with activities of visual conceptualisation and experimentation. Here, two of Kolb’s experiential learning cycle stages are merged to afford conceptualisation through multimodal experimentation. Phase three is concerned with probing the conceptual experiments in their provision of a prototypical Media Architecture experience.

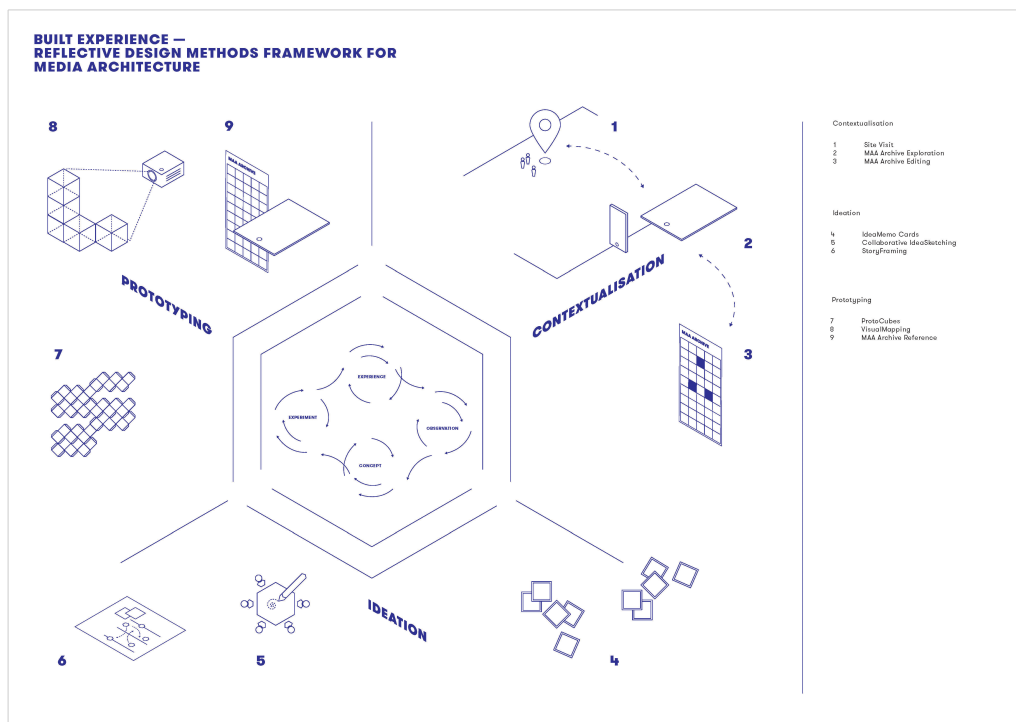


Illustration 4.21: Schematic overview of circular Reflective Methods Framework

Throughout these phases, a set of nine design tools are suggested to be employed. These tools are comprising of human-centred design methods as well as a self-reflective research method approach, including tools that originate from the researcher's observations of his own reflective process.

In the following, these suggested tools will be described in greater detail in terms of their conceptual aim, their selection as well as their functionalities and practical application in the overall process.

Tools for Contextual Research and Aggregation

Referring to the described workshop structure, the first set of tools is concerned with methods for contextualisation of a design issue addressed by the workshop. This includes approaches for researching and aggregating information as a groundwork for further early-stage design exploration. In the following, three tools are presented as an entry point to the reflective design process: 1. *Site Visit*, 2. *MAA Archive Exploration* and 3. *MAA Archive Editing* (see Table 7). They refer to the conceptual framework description for contextualisation described in section 4.2.2 and are based on learnings from the researcher's own reflective process. As experiential tools for contextualisation, they are referencing immersive, human-centred design research methods for investigation into a subject matter (for details see 3.2.1 *Designerly Practice* and 3.2.2 *Tools for Ideas*). Rooted in methods applied by the researcher in his reflections through design practice (see 3.5.5 *Participatory MAA Archive* , 3.5.3 *Collaborative Multidisciplinary Workshop*, 3.5.7 *Engaging Methods*), they include the MAA Archive as an online digital and mobile research tool, and extend to a process of editing and adding to the database as part of a "living database" strategy (see 3.5.5 *Participatory MAA Archive* and 4.2.2 *A Framework for Contextualisation*).


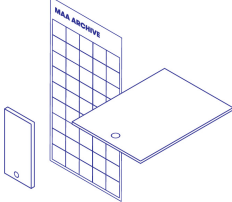
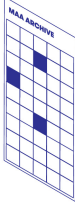
SITE VISIT	MAA ARCHIVE EXPLORATION	MAA ARCHIVE EDITING
		
Concrete Experience Reflective Observation	Concrete Experience Reflective Observation	Reflective Observation

Table 7: Reflective Methods Framework: Tools for Contextual Research and Aggregation

1. Site visit to local Media Architecture project

- What:** To begin the workshop, a short site visit to an existing Media Architecture project or the relevant urban environment the workshop is made. Participants are encouraged to document their general observations/experiences in relation to four categories, based on the qualities of Media Space described earlier: built environment / visual information / social interaction / digital networks (see 2.2 Media Space).
- Why:** This presents an opportunity for participants to experience spatial settings first-hand, especially in surroundings they are less familiar with. For resident participants, the diversity of documentation of the site visit provides further opportunities to highlight site-specific characteristics and untack their multi-layered existence (see 4.2.2 A Framework for Contextualisation, based on 2.2 and 2.4.4).
- How:** Textual and visual note-taking using camera, audio recordings, sketching and writing, according to the four categories. Participants use their smartphones for digital information capturing. Sketches and short written notes are taken on sticky notes. The material from the site visit is printed (photos) and put up together with the sticky notes on a wall in the workshop premises. As an overview, it is categorised according to the four qualities of Media Space: built environment, visual communication, social interaction and digital net-

works. The wall serves as a visual reference tool throughout the workshop. The site visit and documentation approximately take one to two hours combined.

2. *Exploration of the MAA*

- *What:* The digital MAA is used as a repository for existing Media Architecture projects from all over the world. Workshop participants explore the database through visual and interactive filtering options. The taxonomy of the archive is explored by referencing individual experiences from the site visit to similar existing projects (see Illustration 4.25).
- *Why:* Participants learn about the broad variety of existing Media Architectural work. The database provides opportunities for inspiration and reflection on contextual settings as well as trends and categorising effects of Media Architecture on its urban social surroundings (see 4.2.2 A Framework for Contextualisation, based on 2.5.2 and 4.4.1).
- *How:* Participants are encouraged to explore the digital MAA Archive database and its taxonomies on their own, by applying textual and visual searches and note-taking in relation to their individual experience of the site visit using the interactive database and visual browsing. This should be scheduled to take approximately 30 minutes to one hour.

3. *Editing the MAA*

- *What:* The digital MAA is set up as a living database. Once registered as users, participants can add or edit a Media Architecture project to the archive using the project form. Depending on the specific workshop objectives, this procedure can include research and editing of an existing database entry, or the addition of a new project as a contextual reference to the workshops own project objective.
- *Why:* By adding and editing a Media Architecture project, participants engage with the ontological structure of the database and are encouraged to reflect on the project's functional and visual features as well as its social impact as a communication medium (see 4.2.2 A Framework for Contextualisation, based on 3.4 and 3.4.1).

- *How:* Participants add and edit a database project by themselves in groups of two. They either research content in relation to the project visited in-situ or they add a new project that has not yet been covered by the archive. During the editing process, new additions and changes can be related to the site-specific visual reference wall developed in Method 1) above. Duration: 30 minutes to one hour.

The above described first three workshop methods all work as tools for contextual research and information aggregation (in reference to the conceptual *Framework for Contextualisation* formulated in section 4.2.2). Within the settings of an early-stage design workshop, they provide the opportunity to engage with a variety of interlinked perspectives on Media Architecture, while making use of visual and human-centred research tools for reflective practice. Conceptually, by applying a research tool (the database) developed by the author during his own reflective process, the methods act as tools for externalising aspects of the researcher's design contextualisation. The following set of workshop methods builds on them by extending from tools for contextualisation to practical methods for initial design concept development.

Tools for Abstract Conceptualisation

As a second stage the conceptual design methods framework suggests an additional set of three design tools for *Abstract Conceptualisation*, namely 4. *Idea Memo Cards*, 5. *Collaborative Idea Sketching* and 6. *Story Framing* (see Illustration 4.21: Schematic overview of circular Reflective Methods Framework). These represent methods referring to creativity tools for visual ideation in design, such as visual prompts and collaborative sketching, but also human-centred design methods for establishing comprehensible visible narratives, e.g. storyboarding and user scenarios (see also 3.2.1 Designerly Practice and 3.2.2 Tools for Ideas). As visual thinking tools, they have been applied by the researcher in his own reflections through design practice (see 3.5.2 Visual Prototyping, 3.5.3 Collaborative Multidisciplinary Workshop, 3.5.7 Engaging Methods). These explored strategies for visual ideation such as the provision of a customisable ideation card set, an exemplary collaborative sketching process for contextual visual exploration of potential stakeholders' perspectives, as well as a conceptual context mapping template to establish a conceptual narrative from specific ideas. These explorations led to the definition of the following set of tools for Abstract Conceptualisation.

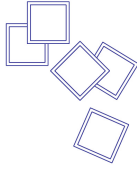
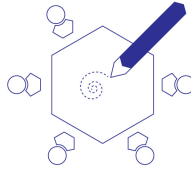
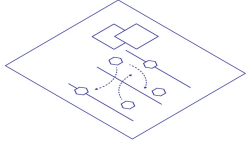
IDEA MEMO CARDS	COLLABORATIVE IDEA SKETCHING	STORY FRAMING
		
Ideation	Ideation Abstract Conceptualisation	Abstract Conceptualisation

Table 8: Reflective Methods Framework: Tools for Abstract Conceptualisation

4. Ideation Memo Cards

- *What:* Ideation Memo Cards are a set of visual image prompts for the creative process. The set of cards contains associative images related to urban space and interaction design. They are deliberately taken out of context and often only show close-up camera angles to provoke thoughts and visual connections. The aim is to integrate the cards into a visual scenario-building process through methods of recombination, extension and random interpretation. The cards are provided as a printing template for preparation before or during a workshop. Custom image sources are suggested to be used to generate and populate the cards (for instance individually generated visual imagery, but also accessible online platforms and databases such as *Wikimedia*, *flickr* or *Pinterest*). In terms of the overall number of cards made available, at least 12 cards per participant should be prepared. There are six categories for the card visuals, referring to the various qualities framing Media Space (see also section 2.2): *Built Environment*, *Informational Content*, *Interaction and Response*, *Audience*, *Technology*, and *Utopia*. Participants are asked to choose and apply the cards in a process of individual visual brainstorming to develop a quick yet tangible interactive narrative for a potential design idea in the given spatial location (see Illustration 4.22).
- *Why:* Using ideation cards as visual triggers works as a kick starter for both individual connotation and imagination. Applying them as a series helps participants think about narratives and interactive flows and allows for quick

visual explanation of an idea to other participants, while also potentially triggering external imagination (see 4.2.2 A Framework for Inclusion, based on 3.5.2; 3.5.6). As a method, it refers to and adapts procedural creativity and ideation tools in design (3.2.2 Tools for Ideas) and describes an adaptation of the visual prototyping approach (see 3.5.2, specifically *Visual Ideation*).

- *How:* In the run-up to the workshop, the workshop host prepares the Ideation Memo Cards based on the templates provided by the toolset. Each participant is asked to choose three idea cards from a larger stack, depending on what draws their interest. They individually use the three cards to develop an image sequence similar to a comic strip that allows telling the basic narrative of an interactive or dynamic story in relation to the spatial location of the future installation and its usage. This initial visual narrative presents the groundwork for the following collaborative sketching method. The duration of the task of choosing and arranging the Ideation Memo Cards should be set to 10 minutes.

5. Collaborative Idea Sketching

- *What:* Based on the previous ideation task, participants elaborate on their image stories and cooperate in a longer sketching session. The visual prompts from the Ideation Memo Cards are used to sketch and/or detail parts of the story that are important but not yet visible in the images. These visualisations are then playfully explored by rotating the table and adopting a different role and thus different expectations toward other participants' narratives.
- *Why:* Collaborative sketching is a fast and efficient tool for establishing visual discourse among a group (see 3.2.2 and 3.5.3). It literally offers a common ground even “when the participants have different cultural and social backgrounds” (Greenberg et al. 2012) and allows simultaneous development and explanation of narratives. Similar to a role-playing method, the additional “rotation” part of the task encourages participants to adopt a new or alien perspective based on the various stakeholders being involved. As an empathic mechanism, this leads to recognition and integration of external requirements in the conceptualisation phase. The general visual approach is a major characteristic of engaging with heterogeneous groups of participants and a diversity of preconditions. The cards help individuals articulate themselves through visual manifestations of ideas, regardless of previous visualisation skills (see 4.2.2 A Framework for Inclusion, based on 3.5.2; 3.5.6).

- *How:* Collaborative sketching starts with a large drawing surface surrounded by the group of participants. Each participant details her ideation card stories from the previous task using rough sketching. New details and alternative options are sought. After 30 minutes of sketching, a role switching method is applied (see De Bono 2000). In a timed rotary system, everyone changes seats with their neighbour and tries to make sense of the new drawing in front of them. For 15 minutes, the participants add their visual thoughts to the neighbour's drawing, thus extending and changing the initial idea. As a follow-up session, each drawing is presented by its two sketchers to the whole group. Duration: 60 minutes.

6. *Story Framing*

- *What:* This tool aims at generating a sequential storyboard and use flow process for the previously sketched ideas. A table-like system, the *Story Flow Map* (see 3.5.3), allows the visual documentation of a narrative while integrating functional, visual and interactive parameters. The template structure provided by the toolkit integrates method approaches from UX and service design, e.g. Touchpoint Matrix and Storyboarding, as described in 3.2.3. The mapping process interrelates aspects of context, content, technology and audience and by doing so, leverages the diverse interests and roles participants may take on during the experimentation and prototyping phase (see Illustration 4.23).
- *Why:* Story Framing provides a method for detailing a potential “use case” and for documenting influence factors throughout the scenario. The table structure of the map helps teams to visually think through relevant levels of requirements originating in the proposed narrative. Participants become aware of correlations and are encouraged to project their proposition into a consequential reality (see 4.2.2 *A Framework for Inclusion*, based on 3.5.2; 3.5.6).
- *How:* Story framing is adopted by teams of two that have previously sketched together in the rotational collaborative session. Within a 40-minute session, the teams discuss their use case to add more detail and visually document related technical, functional or contextual aspects on a large map. The structure of the *Story Flow Map* is provided by the toolkit as a print template to each team. Participants are encouraged to transfer the template to a larger sized sheet and to use elements of analogue visual sketching, previous visual notes or collages in their mapping process. Duration of this method: 40 minutes to one hour.

The above described second set of workshop methods all work as tools for “Abstract Conceptualisation” (referring to Kolb’s *Experiential Learning Cycle* and the *Framework for Inclusion/Envisioning* formulated in section 4.2.2). Building on the previous tools for contextual research, this set of methods aims at actively engaging participants in a visual thinking and ideation process in order to develop early-stage abstract design ideas as an opportunity for design exploration and reflection.

Conceptually, the focus of these ideation tools as visual thinking models is rooted in the visualisation methods applied by the author during his own reflective process (see 3.5.2 Visual Ideation; 3.5.6 Learnings from Practice). The following third stage of workshop methods extends this visual approach to allow for initial design exploration and experiential feedback.

Tools for Active Experimentation: LoFi Prototyping

The last set of tools is based on the conceptual framework description for *Active Experimentation* in a self-reflective design procedure (see 4.2.2). It includes exploratory methods for simple visual and physical manifestation of ideas (7. *Protocubes – Paper Prototyping*; 8. *Visual Mapping*) to serve early-stage conceptual design. As lo-fi prototyping methods (see 3.2.1 Designerly Practice; 3.2.2 Tools for Ideas), they flesh out the experiential learning approach of the framework, while also establishing a setting of collaboration and exchange (as e.g. in 9. *MAA Archive Referencing*). Active Experimentation methods have also been applied in the researcher’s own reflections through design practice (see 3.5.2 Visual Prototyping; 3.5.3 Collaborative Multidisciplinary Workshop; 3.5.7 Engaging Methods). These include the use of the Media Architecture project archive as a research and referencing tool for exchange and discourse (3.5.5 Participatory MAA Archive), but also a toolkit template for a simplified, modular approach to two- and three-dimensional modelling using easy-to-apply paper prototyping (see 3.5.3 Collaborative Multidisciplinary Workshop; 4.2.2 A Framework for Envisioning and Provoking). Based on the conceptual narratives developed in the previous stage of the workshop toolkit, this following set of tools aims at nurturing knowledge creation and engagement through action (see 4.3.1 Constructing Knowledge through Action).

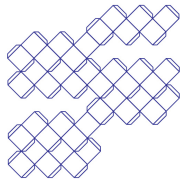
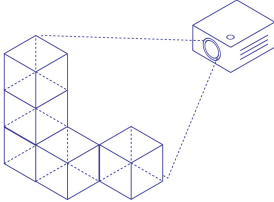
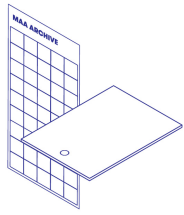
PROTOCOLUBES PAPER PROTOTYPING	VISUAL MAPPING	MAA ARCHIVE REFERENCING
		
Active Experimentation	Active Experimentation Concrete Experience	Concrete Experience

Table 9: Reflective Methods Framework: Tools for Active Experimentation: LoFi prototyping

7. *Protocubes – Paper Prototyping*

- *What:* In an active experimentation stage following the conceptual ideation phase, paper prototyping is used as a low-barrier, generative design method. Participants are encouraged to build two- and three-dimensional modular scenarios at small scale using paper templates for foldable cubes (see Illustration 4.24). The Conceptual Design Methods toolkit provides DIN A4 templates of blank paper cubes for printing, copying and cutting. The cut-out templates can be used both for modelling two-dimensional modular patterns (referring e.g. to LED tiles/cladding grids of facades) as well as for collaboratively crafting versatile arrangements of three-dimensional cubes for visual – and tactile – spatial explorations on a smaller scale. The resulting paper models serve as a simple technique to quickly materialise, discuss and test previously generated ideas.
- *Why:* Similar to collaborative sketching, this lo-fi prototyping approach allows a diversity of stakeholders to engage with creative rapid model-making practices irrespective of their previous disciplinary skills. The paper format can be used flexibly in combination with further visual tools such as analogue sketching and provides material for a variety of collage techniques. Modular structures based on the cube templates allow the simulation of dynamic variation and change even with simple static visualisation elements (see 4.2.2 A Framework for Envisioning and Provoking, based on 3.3; 3.5.2; 3.5.6).

- *How:* In teams of two, participants can print and use cut-out templates for paper cubes as materials for further building and sketching, for instance, using colour, typography and image references from their previous contextual research through the MAA archive. The templates provide options for two- and three-dimensional model-making, simulating for instance archetypical grid-based details of media façade structures as well as miniature simplified three-dimensional building structures for spatial contextualisation. The lo-fi material encourages playful engagement and structural reflection with the conceptual ideas generated in the previous abstract conceptualisation and visualisation phase.

8. Visual Mapping

- *What:* At this stage the toolkit suggests visual *projection mapping* techniques are used as a method for simulating the orchestration of dynamic digital content on physical building structures. Combining analogue paper-based modelling and rapid digital prototyping tools, the Visual Mapping tool applies *Projection Mapping* software to map two-dimensional dynamic imagery on three-dimensional surfaces. Depending on the conceptual approach, this method allows the simulation of digital representation as well as the simulation of interactive response, both in terms of visualisation as well as sensory interaction. At this stage, a range of technologies are optional, depending on the proficiency of the workshop moderator and participating stakeholders. With a basic setup of a mobile computer and a digital projector, participants are encouraged to use VJ software tools for projection mapping of dynamic content⁸⁶. Interactive prototyping tools⁸⁷ (see also 3.5.3 Envisioning the story/Outcomes) are suggested as elements to generate parametric or reactive content for visual projection on the paper-based *Protocube* models.
- *Why:* Visual projection mapping is a relatively simple yet highly representational technique for visualising dynamics within physical three-dimensional structures. The process of developing visual material (e.g., animations, generative graphics, live visuals) for the prototype provides means for sensitising stakeholders not only to the potential visual effects and technologies but also the communicative challenges of defining dynamic visual content for building façades and spatial structures. In directly applying individual skills through making, the participants' commitment to the conceptual idea mater-

⁸⁶ Depending on the proficiency of the workshop moderators, this can include easily accessible software such as VDMX, Resolume Arena or Module 8.

⁸⁷ We experimented with software such as vvvv, Processing and Quartz Composer.

ialises, fostering a stage of personal enthusiasm (Wilkie 2010) when the model is brought to life for the first time (see 4.2.2 A Framework for Envisioning and Provoking, based on the notion of model-making as discourse and reflections on workshop processes, specifically sections 3.3; 3.5.2; 3.5.6; 4.3.1).

- *How:* In a final session, participants work in pairs on their conceptual model. The workshop host ideally provides a library of physical electronic devices and material such as digital micro-projectors, tripods, webcams, plug-and-play gesture and audio sensors as well as software (e.g. VJ tools) and prepared code examples (e.g. for vvvv). The groups define individual tasks based on the requirements of their concept and the material, devices and proficiency at their disposal. The process involves various reiterations and repetition of conceptualisation and experimentation. The workshop host assists in providing specific technical support where necessary. However, an important aspect of the *Visual Mapping* tool is the notion of self-support and the power of collaboration and simplicity in achieving a lo-fi simulation of the conceptual design idea in the given timeframe. This method is set for a duration of about two hours.

9. *MAA Archive Referencing*

- *What:* Following the practical prototyping tools described in the previous two framework methods, *MAA Archive Referencing* is designed as a method for contextualising the subject and results of individual prototyping experiments in relation to existing Media Architecture practice. The MAA archive is applied as a referencing tool to introduce test persons outside the collaborative team to the idea of a given workshop prototype as well as to existing related Media Architecture projects and their performance at scale.
- *Why:* As lo-fi experiments, the previous prototyping outcomes are limited in their ability to be tested as experiential models. However, they provide valid insight into contained social, functional or visual aspects of a proposed installation. A re-contextualisation using the MAA archive enables testing to be related quickly to the subject of the prototyping experiment and interpolates its usage as a Media Architectural installation at a larger scale. Thus, as a tool for iterative reflection and reference, the archive acts as a source of continued contextualisation for the team during the experimentation phase (see 4.2.2 A Framework for Assessment and Documentation, based on 3.4.1; 3.5.5; 3.5.6). The MAA's descriptive project content, specifically the visual repres-

entation of a project in relation to the tagging system and introduced taxonomies help the team develop and evaluate a more tangible vision of their project idea in a real world context.

- *How:* The archive is used as a referential explanation tool in quick, interspersed and informal testing to introduce a test person to the context of the prototypical experiment. By presenting a lo-fi prototype to the test person together with selected project examples from the MAA archive, the database becomes a reflective visual tool for projecting the idea of the prototype into a potential real-world scenario based on related project descriptions in the database. Referential detailed information as well as the interactive visualisations of related projects in the database spark further discussion and reflective exchange among the team. The suggested duration for this method depends on its application, either as a series of quick feedback sessions with an external in order to iterate on the prototype, or as a final testing session after a lo-fi prototype has been built. Overall, it should amount to 30 minutes.

The third set of workshop methods presented above focuses on easily employable prototyping tools to encourage “Active Experimentation” (again referring to Kolb’s *Experiential Learning Cycle* as well as the *Framework for Inclusion/Envisioning* and *Assessment* formulated in section 4.2.2). Thus, it further extends the process of ideation and exploration established within the second set of *Tools for Abstract Conceptualisation* by providing collaborative prototyping methods as means for design collaboration and discourse. The project database again acts as a referencing tool and supports contextual reflection and iteration. Conceptually, these tools are derived from visual prototyping approaches applied by the researcher as investigations into design as experience. They are referring to the concept of sharing threshold knowledge (see 3.4.1 Making Sense of Experience; 4.2 Threshold Concept Revisited), as well as to self-direction and engagement as experiential conditions within multidisciplinary workshops (see 3.4.2 Self-direction and Engagement; 4.3.2 A Framework for Ownership).

The following visuals illustrate examples of workshop material and templates provided in the three sets of tools above. The material includes a workshop handout package for participants, with a poster, postcards and short explanations of the reflective method framework and tools (Illustration 4.27). Additionally, printing templates for various tools are shown, such as the *Ideation Memo Cards*, the *Protocubes*

and the *Story Framing* table, plus the web-based MAA database archive, accessible through the participants' individual mobile devices (Illustration 4.22 - Illustration 4.25).



Illustration 4.22: Sample workshop material: Ideation Memo Cards



Illustration 4.23: Sample workshop material: Story Framing



Illustration 4.24: Sample workshop material: Proto Cubes Paper Prototyping

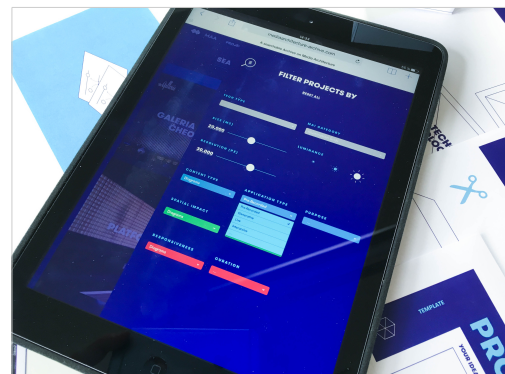


Illustration 4.25: Sample workshop material: MAA Archive Exploration



Illustration 4.27: Workshop handout package: Process poster and postcards and templates for self-printing..



Illustration 4.26: Examples of MAA workshop material based the Reflective Methods Framework

Workshop Settings and Application

As mentioned in Section 4.3.2, contextual inquiry should stress the importance of inspiration through contextual findings. Following the “prepared-for-action, not guided-in-action” concept (Stolterman 2008), contextual inquiry needs to allow for immersion into the richness and complexity of a situation in order to recognise appropriate approaches for the design task. Therefore the proposed workshop aims at involving multi-stakeholder and multidisciplinary team constellations of six to eight participants from creative, administrative and engineering backgrounds as well as commissioners and locals. Ideally, a workshop session comprises a full day and is separated into the three phases, each variable in length and depending on the overall timeframe. The workshop structure is designed to require a moderated setting. A dedicated moderating authority leads the workshop and assists in establishing environments for creative exploration. The moderator initialises the various workshop phases, introduces the methods tools and provides technical support in prototyping tools.

The proposed conceptual design workshop has no special requirements regarding workshop location and premises. However, this can partly depend on the workshop’s setting in a given overall project timeframe. While a large part of contextual research (phase one) can happen digitally through the database, thus providing maximum flexibility, on-site visits make sense for building projects that are either in a more advanced state or located in surroundings that demand a more specific examination. Phase two is also relatively flexible. A publicly accessible open space with modular tables and seating is ideal. Phase three, as the stage of experiential prototyping, can also take full advantage of the workshop premises but may be conducted on-site depending on the prototype to be evaluated.

4.5 Summary

Adapting self-reflective procedures in experiential learning, this chapter presented a methods framework for conceptual visual design tools in Media Architecture with multiple stakeholders (see Section 1.3, research objectives 5 and 6). Building on previous findings of visual design methods as a dialogical approach to generate ideas, discourse and engagement (see Section 3.6 on findings), the chapter focused on an experiential learning process as a structural framework for dialogical design and ownership in Media Architecture. The approach is framed by the consistent translation of the author's reflective research tools as blueprints for a communication-oriented design procedure in early phases of the Media Architectural conception process.

The proposed methods framework establishes a reflective methodology rooted in the concept of shared threshold knowledge (Kolb 1983; Meyer & Land 2003) as an experiential approach to contextualisation, inclusion, envisioning and documentation in Media Architectural design processes. In the light of theoretical and practical considerations of communication design processes as both a tool AND outcome, it presents the MAA as a practice-led case of creating individual knowledge through action. The MAA is embedded into an experiential methods toolkit for reflective visual communication in multi-stakeholder workshops for Media Architecture. The chapter began by revisiting experiential learning theory through troublesome knowledge concepts (Section 3.4.1) and their adaption to discursive design setting. A self-reflective conceptual framework is outlined, referring to Kolb's learning cycle approach as foundational pattern for a visual drafting process including stages of contextualisation, inclusion, envisioning and documentation in planning Media Architectural experiences. On an additional level, the importance of the "tool-as-outcome approach" was highlighted as a conceptual base to knowledge creation and ownership. This chapter argued that a process of self-reflection through design eventually leads to a reflection-oriented outcome for provoking engagement through thoughtful and multi-professional participatory practice. The practical reflection included the revision of the classification system and the design of the MAA for inclusion as a visual tool for collaborative investigation and contribution (see Section 1.3, research objective 7). Complementary to the archive, a set of specific conceptual design methods was presented as a framework for multi-stakeholder workshops. Corresponding collaborative ideation and prototyping procedures have been reworked as a methods toolset in relation to the proposed self-reflective stages (see 4.2). These procedures provide visual design activities as well as guides and templates for flexible integration into the given workshop process.

With regards to the experiential perspective of “tool as outcome”, the development of the MAA itself represents a valuable example: it was initially conceived as a self-reflective research tool but later became part of an actual practical design outcome, which itself supports self-reflection in a multi-stakeholder design process. The self-reflective visual design framework adds to the emerging call for relevance and civic participation in Media Architectural design (see 4.3.3). It provides a novel visual communication approach to designing (for) discourse in the field (see Chapter 3). The overall notion of participatory ownership is integrated as a central conceptual focus of the visual design framework and the perception of Media Architecture as a situated experiential design process rather than a physical environment (4.3.2).

In summary, the findings of this chapter “Proposition — A Reflective Methodology” are:

Findings from Literature

- The conceptual model of the nested learning cycle incorporates previous aspects of experiential learning practice as well as designerly iteration procedures into a novel methodology for visual discourse in Media Architecture design.
- The conceptual method framework adds visual communication to current inclusive efforts that evolved within Media Architecture, providing a discursive methodology for ownership by recognising aspects of individual *meaningfulness, identity, responsibility* and *efficacy* in multi-stakeholder situations (4.3.2).

Findings from Practice

- Initially conceptual research tools such as the MAA or conceptual visual schemas represent valuable examples of reflective design tools as reflective outcomes leading to the visual method framework.

5 CONCLUSION AND FUTURE WORK

5.1 Introduction

“More than in simply creating a physical space, we are interested in designing someone’s time spent within this environment.”
(Dieter Brell, 3deluxe, see 7.4.4)

This PhD thesis investigated *how experiential and visual design methods can help create multi-stakeholder participation and engagement in Media Architecture*. Its findings resulted from practice-led research on the theoretical notions of space, experience and learning as well as corresponding practice-oriented reflections using visual, participatory and interactive design methods. These were derived from the author’s own reflective and practice-oriented research approach, and based on a set of tools developed and applied along this process. The findings highlight the opportunities of including visual communication as a facilitating strategy for civic engagement and ownership in an early-stage design process for Media Architecture. The study provides a reusable and adaptable visual design methodology and toolset for contextualisation and stakeholder exchange, rooted in experiential learning and capacity building.

The first chapter defined the scope of the study, introducing the origin and motivation of this research and current challenges of Media Architecture. In addition to introducing the contextual territories guiding this study, it presented the main aim of this research, which is *to develop a design methodology reflecting the communicative nature of Media Architecture, thus serving as a base for developing sustainable and engaging communication design concepts*. The objectives derived from this aim were to:

1. conduct a **literature review of theoretical discourse** about urban digital media spaces and philosophical perspectives on experiencing (digital) technologies of making place.
2. conduct a **review of practice and current design processes** in Media Architecture.
3. review **design workflows and methods in related fields**, based on occurrences and problems within particular case studies.
4. define underlying **patterns of cooperation** in multidisciplinary teams.
5. define a **methodology based on self-reflection and experiential learning** to lead a design process for Media Architecture.

6. develop a **prototypical framework of visual design methods** for participation and exploring its application within student workshops.
7. **apply and evaluate the framework** in a practical context based on its communicative, participative and experiential relevance

The practice-led nature of this thesis is reflected in the structure of the three main chapters, Chapters 2, 3 and 4. Each chapter is subdivided into two complementary phases of theoretical and practical studies and correlates the objectives and findings from literature and practice in a summary at the end. Chapter 2 laid out the preliminary research context by clarifying contextual notions of Media Space and Media Experience and discussing collective, joint experiences in Media Architecture in theory and practice. Chapter 3 investigated design procedures as catalysts for exchange, discourse and reflection, based on literature sources as well as a series of workshops and practical design strategies. Consequently, Chapter 4 then proposed a novel methodology and practical framework for visual design discourse in Media Architecture, based on self-reflective experiential learning procedures for visual communication. Practical outcomes such as the MAA present an example of a *tool-as-outcome* in reflective design practice.

This concluding chapter provides a summary of the research contributions, the research findings in relation to the design process as well as their contextual and methodical significance. The chapter concludes with a critical reflection on the research field as well as the process and limitations of the study. It closes with opportunities for future research and outcomes.

5.2 Contributions

This section provides a description of the relationship between the overall research question of *how experiential and visual design methods can help create multi-stakeholder participation and engagement in Media Architecture*, the related aims and objectives as well as the relevant findings of this study.

5.2.1 Media Architecture as Shared Experience

Chapter 2 described comprehensive research that was undertaken to conduct a **literature review of theoretical discourse (objective 1)** about Media Architecture as Media Space and the philosophical perspectives on experiencing situated (digital) technologies. This was achieved by combining a **review of multidisciplinary perspectives (objective 2)** from architecture, informatics, experience design and social sciences with an overview of **practical processes in the field of Media Architecture (objective 3)** (→ see 2.4 Media Architecture as Shared Experience; 2.5.2 Classifications of Media Architecture; 3.5.5 Participatory MAA Archive). This theoretical review was informed by an inquiry into exemplary design workflows and methods in current professional settings. A series of interviews with artists and design offices in the field informed a discussion of structural findings from literature and their particular relevance within certain case studies (→ see 7.4 Expert Interviews). Schematic visual mappings of the research territory as well as a digital project repository were applied to document the theoretical and practical context.

The review of Media Architecture as a conceptual entity of built, visual, social and networking space highlighted the experiential interplay between humans, digital and physical objects. As the shared experience of space, Media Architecture it was found to depend on processes of information, adaption and engagement. Generative design research methods not only unfolded as suitable strategies for inquiry into situated media experiences but also suggested visual design tools in Media Architecture as an opportunity for engagement in local capacity building. Visual literature and practice mapping, as well as the use of visual schemata for structuring and conceptualisation, were key to a process of reflection and externalisation in the field of study. They invited a closer reading of Media Architecture and its contextual angles. As a strategy of organisation, the visualisations helped to develop ordered clusters and taxonomies of information and ideas and supported organised patterns of thinking and uncovering cross-relations (e.g., among literature, interviews, practice). As a knowledge tool for inquiry, learning and understanding, the visualisation processes suggested a new

strategy for taking experiential design action in communicating Media Architecture. The MA project archive (see 2.5.4) represents such reflection-oriented design action. Together with feedback from Media Architecture practitioners (interviews and studio visits), the notion of visualisations as tools for cognitive reflection and exchange opened up a novel perspective for further examination of communication design in Media Architecture. This perspective is less concerned with Media Architecture as a visual phenomenon, but rather concentrates on visual design as shared discourse in Media Architecture.

5.2.2 Experiential Design Methodology for Ownership

Based on the review of Media Architecture as experiential design practice and the investigation into design workflows and methods in related fields, Chapter 3 set out to examine **patterns of design cooperation (objective 4)** and discourse in multidisciplinary team constellations. Particularly, design action and the ways of applying (visual) materialisation as a methodology for discourse and conversation were explored. Correlations to self-reflective learning and participatory action were explored in relation to communication design practices (→ see 3 Shifting Focus — Designing (for) Discourse). Consequently, prototypical design methods were applied in practice and explored in student and professional workshops (→ see 3.5.3; 3.5.4; 3.5.5). These laid the groundwork for the resulting design methodology and a correlating **prototypical framework of visual design methods (objective 6)** based on the interactive MAA as a participatory tool for investigation (→ see 4.4.1 MAA Archive and Classification System; Error: Reference source not found Error: Reference source not found). Using the meta structure of a nested learning cycle approach (4.2.2), this framework presents a novel **self-reflective experiential methodology (5)** for design conception in Media Architecture.

The review in Chapter 3 laid the initial foundation for a prototypical collaborative methods framework (see 1.3, objectives 3, 4, 6). The suggestion of dialogical approaches to visual design as processes of *re-framing* (Schön 1984) added significance to collaborative design action for exploring methods such as reflective sketching or prototyping (see 3.5.2 and 3.5.3). The chapter also revealed a congruence of multimodality in experience-based learning processes to the various modes of designerly procedures for ideation, exploration and conceptualisation in research (Biggs 2004a; 2004b). The exploratory visualisation methods applied for ideation, exploration and reflection during the workshops generated three types of outcomes relevant to a conceptual design framework for Media Architecture:

- *Material for learning*, expanding the individuals' knowledge or skill repertoire (e.g.: MAA database, 3.5.5; Visualisation and prototyping methods, 3.5.2);
- *Systemised forms of communication*, establishing a common ground between diverse stakeholders or groups (e.g., Collaborative workshop formats, 3.5.3);
- *Aggregations of historical and professional knowledge*, providing contextual references on visual and qualitative levels through information clustering (e.g., MAA database and participatory editing practice, 3.5.5).

While the outcomes of methods are not generalisable, the overall methodology describes a systematic approach to work oriented toward integrative and communicative design. However, the proposed structured visual collaboration provided opportunities to re-evaluate and experientially probe collective ideas on a continuous basis (see 3.5.3). This was found to promote enthusiasm (Wilkie 2010) and socio-dynamic momentum and identification among participants. Thus, self-reflection through visual materialisation and communication was suggested as a potential key element to ownership in Media Architecture. In addition to the development of a visual methodology for Media Architecture, Chapters 3 and 4 observed the meta correlation of this research process to the reflective design framework. In Chapter 4, the novel perspective of the concept of the visual “tool as outcome” in Media Architecture unfolded and was further discussed.

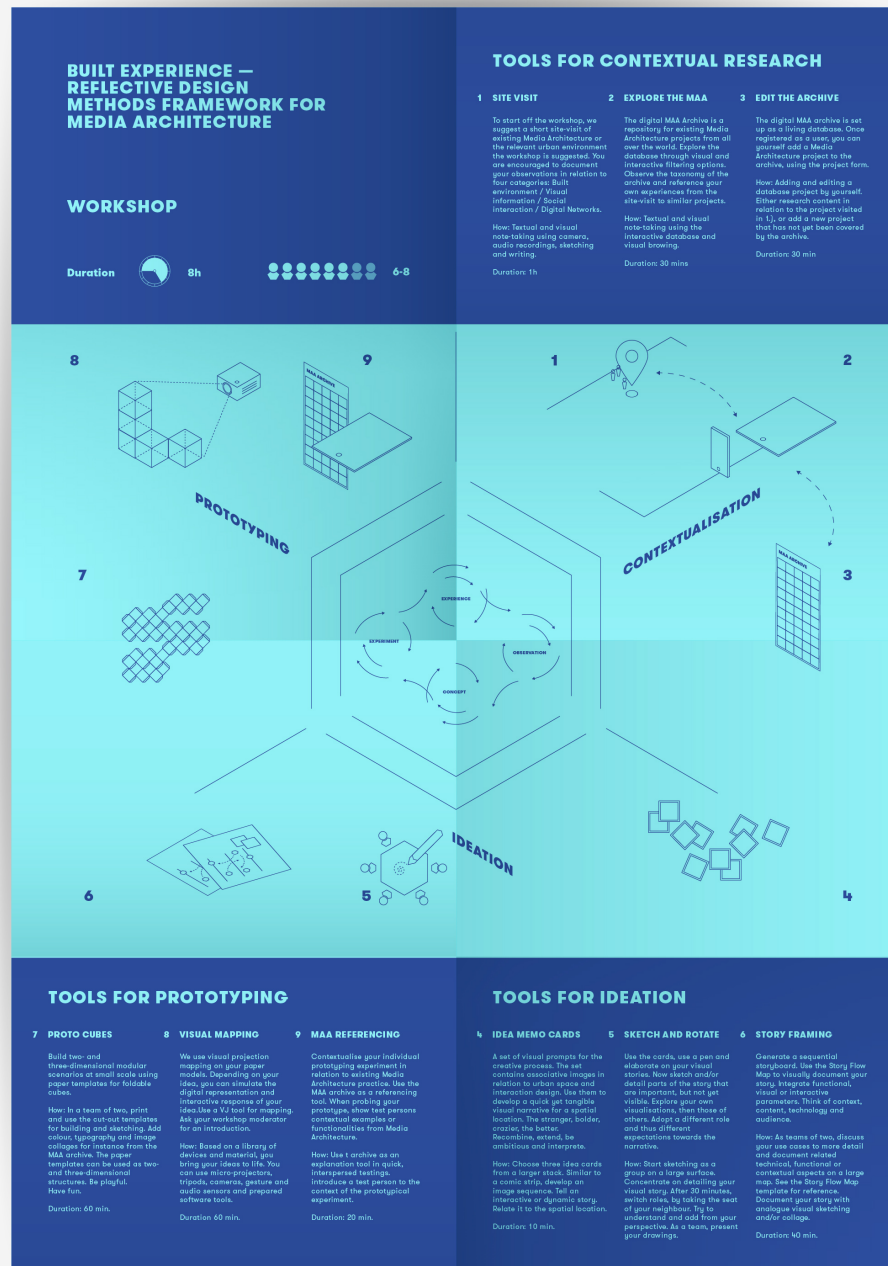


Illustration 5.1: Info poster with schematic overview of the conceptual methods framework, based on an experiential learning cycle approach

5.2.3 Visual Communication as Facilitating Reflection

Over the course of this research, visual communication played a major role as a reflective designerly tool for research. Its application was twofold: as a utility to develop and engage in a reflective design process (→ see 2.5.3: Conceptual Schemas), and as a representational tool for generating a visual, designed outcome of this process (→ see 3.5.2: Visual Prototyping; 3.5.6: Learnings from Practice).

Adapting self-reflective procedures in experiential learning, Chapter 4 presented a new **methodology based on self-reflection and experiential learning to lead a design process for Media Architecture (objective 5)**. This methodology is rooted in the concept of shared threshold knowledge (Kolb 1984; Meyer & Land 2003) as an experiential approach to contextualisation, inclusion, envisioning and documentation in Media Architectural design processes. The approach builds on previous findings of visual design methods and is applied in a **prototypical methods framework (objective 6)** to present a refined iteration of a dialogical approach to generate ideas, discourse and engagement (see Section 3.6 on findings). It presents the MAA as a practice-led case of creating individual knowledge through action. The MAA is embedded in an experiential methods toolkit for reflective visual communication in multi-stakeholder workshops for Media Architecture.

Chapter 4 also proposed an experiential learning cycle approach as a new foundational pattern for a design process in Media Architecture. It was suggested as a communication design methodology for participation covering stages of contextualisation, inclusion, envisioning and documentation, specifically in early conceptual stages of the overall design process. On a second level, the chapter added significance to the “tool-as-outcome approach” as a conceptual base to knowledge creation and eventual ownership within the designed outcome. The design research process applied by the researcher to develop the methodology suggests that reflective design-related procedures lead to reflection-oriented outcomes. These procedures provide a key to engagement in thoughtful and multi-professional participatory practice.

Practical findings included the revision of the classification system to integrate aspects of ownership in characteristics of Media Architectural space. This led to the redesign of the MAA as a **visual tool for collaborative investigation and contribution (see Section 1.3, research objective 7)**. Corresponding collaborative ideation and prototyping methods were reworked in relation to the self-reflective stages of the methodology (see 4.2) to present novel visual design activities as well as formal guides and

templates for flexible integration into given workshop processes. Thus, the conceptual methods framework added visual communication to current inclusive efforts that have evolved in Media Architecture, providing a new discursive methodology for ownership to early phases of the related design process, by recognising aspects of individual *meaningfulness, identity, responsibility* and *efficacy* in multi-stakeholder situations (4.3.2).

5.3 Discussion

The conducted research allowed the exploration of potentials and challenges of visual communication in Media Architectural design procedures. The first part (Chapter 2) set the context and provided an understanding of experiential and spatial qualities, accompanied by practice studies in the field. Key to these studies was an understanding of Media Architecture as a shared experiential interaction between multiple stakeholders. Thus, the second stage (Chapter 3) placed the focus on design (for) discourse and cooperation, highlighting correlations of experiential learning and visual ideation design. Uncovering ownership as a central motive, the third part (Chapter 4) provided a novel methodology of visual communication in Media Architecture based on experiential learning and reflection, yielding stakeholder involvement. In providing a “tool as outcome” approach, the study presents visual communication as a strategy for facilitating multi-stakeholder engagement.

In the following, key outcomes from this research are discussed in terms of their significance in regard to a new understanding of *multi-stakeholder participation and engagement in Media Architecture*. The section aims at addressing its re-usability and adaptability for mixed professional and non-professional stakeholder groups. It presents the methodology as a practical guideline for mutual interaction and discourse in conceptual design settings for Media Architecture.

5.3.1 Significance as Design Framework

In the field of Media Architecture, there is currently no conceptual design approach for applying visual design as experiential communication tool directed toward ownership among groups of stakeholders. In building on shared learning and *threshold knowledge* as a key element for design sustainable communication in Media Architecture, the research draws on constructivist approaches to learning as an experience (Dewey 1934; Schön 1983; Kolb 1983; Meyer & Land 2003). In a methods framework for the conceptual design stage, it proposes a reframing of Kolb’s learning cycle approach to engage stakeholders from a variety of backgrounds. It tackles the central problem of the contextual relevance of Media Architecture (see Sections 1.2; 1.3) by enabling direct stakeholder participation through conceptual design workshops.

The design method framework presents new visual(isation) tools for contextualisation, ideation and prototyping to generate exploration, activity and responses among workshop participants.

For Contextualisation

The framework provides opportunities for participants to become familiar with the concept of Media Architecture. Based on the theoretical review of Media Space as a conceptual entity of built, visual, social and networking space (see Section 2.2), it sensitises participants for experiential interplay between humans and digital and physical environments as a shared experience of space.

The methods framework reflects this by suggesting a combination of in-situ explorations (*site visit*) and research through a digital visual database (MAA). While first-hand explorations allow participants to experience and document concrete spatial settings, the database can be explored by referencing individual experiences from a site visit to a broader variety of examples. The MAA was built on a novel taxonomy derived from the analysis of literature and conceptual perspectives on the field of practice (see Sections 2.5.2; 4.4.1). Its intention is not only to visually document existing projects and their individual qualities but also to allow for an informed overview through multi-faceted categorisations and visual information mapping. The developed taxonomy incorporates perspectives on spatial media from urban planning and architecture and combines them in a novel way. The archive is set up as a living database; it is intended to grow from participation and, while being edited, provide opportunities of engagement through reflecting and validating the categorisations provided.

Within the proposed toolkit, the archive is used as a way to establish contextualisation through interactive and visual exploration (see Section 4.2.2). As a living database, it can be used in an applied workshop task to administrate and edit new and existing entries, thus helping workshop participants reflectively observe Media Architecture practice and its individual contextual impact. The MAA is also an example of how a reflective practice-led research approach in design methodically generates artefacts as tools to inform the research process on issues from practice and demonstrates how reflective design research can lead to actual design outputs grounded in and developed for practice.

For Ideation

As a tool for creative participation, a further ideation stage is intended to generate opportunities for abstract conceptual thinking through concrete and adaptable visual tools (reflective action). The development of these tools builds on insights gained from research on creative practice as discourse and the use of visual prototyping as a tool for communication and reflection (see 3.3.2; 3.5.2).

This stage is supported in the framework through a combination of visual tools for idea generation, collaboration and narration. The *Idea Memo Cards* work as visual triggers to generate individual connotation and imagination and lead to a stage of collaborative visual discourse among stakeholders (*Collaborative Rotational Sketching*). Quick, informal visualisations proved to be an efficient tool for establishing discourse on ideas and generating articulation about and empathy for external perspectives. A third tool allowed the visual documentation and detailing of narratives related to the sketched visualisations (*Story Framing* using the *Story Flow Map*). This tool provided a novel conceptual approach to Media Architecture as a discursive visual narrative and helped map experiential conditions, correlations and requirements (see 2.4; 3.5.3).

These visually oriented approaches helped participants from various backgrounds gain a shared understanding of individual perspectives and a general idea of underlying theoretical concepts useful for informing the actual design process for Media Architecture. Adopting a research perspective on visual discourse in Media Architecture led to a novel way of using visually oriented design research tools as an actual design framework for stakeholder integration.

For Prototyping

The prototyping stage of the framework extends the notion of visualisation methods as opportunities for creative participation to an experience coined by active experimentation and concrete experience (Kolb 1983). It builds on individual capacities in stakeholders and creates a learning experience among heterogeneous groups based on the notion of shared troublesome knowledge (see 4.2.1). In reference to Biggs (2004b) and Wilkie (2010) this phase emphasises visual lo-fi prototyping as tool for “enthusing” situations, thus generating a sense of engagement and ownership among stakeholders (see 3.2.3; 3.4.2).

A third stage in the framework offers adaptable visualisation tools for generating prototypical visual experiences in a multi-stakeholder context. Building on previous ideation results, the framework provides lo-fi prototyping methods as an approach to

engage visualisation as an experiential tool irrespective of professional skillsets. A combination of three-dimensional paper prototyping using *Protocubes*, as well as *Visual Mapping* as a low-barrier digital projection technique, is introduced to simulate potential dynamic qualities of a particular idea. The approach highlights the socio-dynamic potential of prototyping models as an enthusing tool, rather than their direct technical feasibility. However, as a contextualisation tool, *MAA Referencing* is suggested to relate the experimental stage of active exploration to the existing practice field for instant validation and referencing to visual, functional, spatial and social aspects of real-life examples (see 3.2.3; 3.5.2; 3.5.3).

Prototyping for ideation is a strategy of co-creation in design (Löwgren & Stolterman 2007). However, while other approaches stress participatory practice, the focus of this research lies on ownership and argues for reflective design as a key component for sustained engagement and appropriation of media spaces. In the field of Media Architecture, there is currently no conceptual design approach based on experiential learning as reflective practice. The concept of shared troublesome knowledge is presented as an underlying theme for a conceptual design methods toolkit to elicit ownership as a requirement for sustainable communication in Media Architecture.

Originality

While design methods for collaboration and participation in Media Architecture are generally not new (see 4.3.3), this research project focused on visual communication both as a new contextual perspective on Media Architecture and an experiential tool for extending accessibility, participation and reflection on design processes for Media Architecture. The presented methods framework is grounded in pragmatist thinking and proposes a novel approach to experiencing Media Architecture and its conceptual potentials through reflective visual communication in a related design process. The developed methods framework incorporates and adapts experiential learning procedures as a fundamental structure for conceptual and collaborative design stages in Media Architecture. The applied design methods for exploration, ideation and conceptualisation promote visual language as a means of low-barrier access to design collaboration in multi-stakeholder environments. They are used as visual communication tools to “tap into” shared troublesome knowledge (see 4.2.1). This notion reflects the proposition of this research to appreciate the conceptual design process as an individual learning experience coined by exchange with other knowledge spaces and generate ownership in the discourse of the digital city, its formation and decoding.

5.3.2 Significance as Visual Methodology

Over the course of this practice-led research, visualisation practices were introduced as reflective designerly research methods on two levels: as process tools and as process outcomes. Initial schematic visualisations of the research field helped the author develop an understanding of the research specificity and focus. These visualisations were useful as thinking tools to connect and refine hypotheses and loose lines of thought. On an additional level, these schematic visualisations were also used as vehicles for discourse to convey and refine systematic approaches for an academic audience through papers and visual presentations, especially during the first and second stages of this research (Chapters 2 and 3; see also publications and academic activities in Appendix 7.5).

Facilitator for Participation

With reference to current developments in the field (as presented in Section 4.3.3), this research seeks to contribute to the discourse on Media Architecture not in terms of a conceptual approach to designing the actual digital/physical space itself but rather for informing a new conceptual approach to designing the collaborative and experiential process of creating such spaces.

As such, it ties in with the sort of participatory meta-level design approaches referencing strategies of empowerment (Till 2009) and articulated, for instance, in Caldwell and Foth's (2014) notion of DIY Media Architecture and its use for community engagement. The living MAA database and the related conceptual design framework aim at provisioning communication tools to establish multi-stakeholder involvement. These tools suggest visual and interactive communication as a mediating vehicle of articulation and empowerment, similar to the urban prototyping approach presented by Korsgaard and Brynskov (2014). For them, objects made by people and, in this respect, visual prototypes of communication, act as a "distributed mind" – referring to (Miller 2008) – in that they influence others' minds. In the case of Media Architecture, media become part of a physical habitat for people just as much as they are used to express, inform, communicate and entertain. In this context of mediatisation (Lundby 2009) (i.e., the extension of mere mediation to form a strategy of shaping relations between objects and people), a conceptual design strategy for Media Architecture needs to reflect the broadened impact of visual prototyping. It should embrace the "dynamics of ownership" (Light et al. 2013) between people and media objects in multi-stakeholder design challenges, as suggested in Section 4.3.2.

The MAA conceptual design framework contributes to this notion of mediatisation in Media Architecture on a thematic and procedural level. It argues that experiential forms of engagement using visual design tools create interest, sensitise and lay the foundation of ownership for Media Architectural spaces.

Extension to the Experience

The notion of shared troublesome knowledge is proposed as a core concept and experiential stimulus for collaborative exploration using the conceptual design framework. The application of this framework suggests a way to extend the Media Architectural experience from a predominantly spatial experience to encompass its own conception and participatory ownership. Owning the creative process becomes part of the Media Architectural experience.

As a conceptual design framework, the outcome of this research ties in with other existing toolkits for designing and prototyping in a Media Architecture context. Section 4.3.3 presented several perspectives, including participatory frameworks (Caldwell & Foth 2014; Korsgaard & Brynskov 2014; Fatah gen. Schieck et al. 2009) as well as more technical prototyping approaches, for example, Wiethoff's "Sketching with objects" and "Lightbox" (Wiethoff 2012) or (Behrens et al. 2015).

The proposed conceptual framework builds on these perspectives. However, it extends a functional, technical or participatory bias with a focus on (visual) communication and experiential design learning as a driver for continued ownership. The research follows a procedural communication approach, thus leveraging the inherent connection of tool and outcome in design, particularly in practice-led design research. Visual communication methods in this sense are applied as a method of designing a multi-stakeholder process, just as they are used to elaborate visual mock-ups and propositions for outcomes.

Tool as Outcome

Over the course of this practice-led research, visualisations were introduced as reflective design tools in two ways: as methods to inform the process and as outcomes of a design process. Initially, schematic visualisations of the research field helped the author develop a basic understanding of his research specificity and focus. These were useful as thinking tools by connecting and refining hypotheses and loose lines of thought. On a second level, these schematic visualisations were also used as

vehicles for discourse to convey and refine systematic approaches for an academic audience through papers and visual presentations, especially during the first and second stage of this research (Chapters 2 and 3).

Communication design methods had a major impact on the process used in this research. Initial visual approaches, especially a graphic project overview, led to the development of the first version of an interactive MAA database. Originally just intended to graphically map the research field, they became a tool for interrogation, hypothesis and proposition as well as practice during participatory workshops. The visually oriented approaches helped participants from a broad variety of backgrounds gain a shared overview of the field of practice, as well as a general idea of underlying theoretical concepts that may be useful to inform the design process. The gradual extension of the MAA to form an interactive collaborative platform during the second and third stages of research led to the practical application of tools for research and reflection to tools for participation and capacity building. Both theoretical and practical progression helped form a conceptual approach from design for discourse to design for responsibility and ownership.

In discussions on defining practice-led research, various academics refer to the perspective of the UK's Arts and Humanities Research Board (AHRB) (Rust et al. 2007). Mäkelä, for instance, pointed out that "creative practice is not necessarily research, but creative practice that meets certain criteria can be regarded as research. The requirements are that there have to be explicit research questions, specific methods for answering the questions and a specific context in which the research is carried out" (Mäkelä 2007). This definition build on a somewhat clear differentiation: Practice and research can be linked under certain conditions while still being accepted as two relatively distinct entities.

This PhD study began as an enterprise of research into and through design grounded in Media Architecture practice. However, over the course of the research process, this perspective evolved, leading to a proposition for a Media Architecture design process as/through research. The thesis focus shifted over time, developing a focus on self-reflection and experiential qualities of engagement in visual design processes and proposing design tools such as the MAA database. It became an object of "retrospective reading" (Mäkelä 2007) of the researcher's own design working process and his contextualisation of outputs and findings. Following Biggs (Biggs 2004a), tools for design investigation and the role of artefacts came to the fore. Activities such as conceptual sketching, schematic visualising and prototyping as communicative means for conveying and distributing knowledge among stakeholders as well as within the research process became an essential aspect in the self(-reflective) outset of this thesis. In this respect, it follows the pragmatist understanding that knowledge can

be found in design actors, processes and products (Cross 2007) (Latour 2011) and that artefacts enable knowledge to evolve through making and related discourse (see 4.3.1). This reflective design discourse is both a construct of materialising knowledge (e.g., visual prototypes or the *MAA*) as well as constructivist momentum combining epistemological entities of procedures, objects, tools, institutions and individuals to form an experiential design knowledge “mechanism”.

Originality

Among the design frameworks that have been developed in the context of Media Architecture and public displays over the past years (e.g. Fatah gen. Schieck et al. 2009 on Architecture and Social Implication; Dalsgaard & Halskov 2010 on Participatory Design; Wiethoff 2012 on Interaction Design) (also see 4.2.3), this research is contextualised as being primarily concerned with visual communication as both subject and method in developing an extended experience of Media Architecture. In focusing on the design process itself as a discursive situation and applying visual prototyping as a communication tool, it covers two of the domain-specific challenges (*process* and *prototyping*) identified in Media Architecture so far (Dalsgaard & Halskov 2010; Wiethoff & Gehring 2012; Wiethoff et al. 2014). A recent overview of approaches presented five categories of tools – *software tools*, *projection*, *3D models*, *hardware prototyping* and *evaluation tools* (Dalsgaard et al. 2016). In this context, the visual methodology suggested by this research opens up a new category of *communication* tools for mediation and stakeholder activation using visual prototyping. As a process of applying visual design as experiential strategy, the proposed conceptual design process becomes part of the visual and participatory experience of Media Architecture. The tool becomes part of the experiential outcome. In relation to existing design processes suggested for use in the field (see above), this perspective presents a novel approach.

5.4 Progression

The nature of this research journey as an exploration of practice-led and interdisciplinary design methodology has had a profound impact on the professional and educational practice of the researcher.

- It offered theoretical and practical training in applied methodologies with respect to design research, its inclusion and its communication of practice as a research component.
- Visual prototyping methodologies as a key component of this research led to an enriched teaching and professional practice, yielding the application of findings and methods to visualisation as an engaging strategy.
- The study provided a range of opportunities to connect with the digital and spatial design research community. Publications and conference presentations allowed exchange within a growing community of design practitioners involved in design research⁸⁸.
- It enabled academic activities as a supervisor and external examiner for graduate programs in practice-led communication design research⁸⁹.
- Competences gained from this research journey provided opportunities to establish workshop formats on reflective practice in digital design and Media Architecture.

Overall, these various strands of impact allowed the author to identify a range of opportunities for further investigation in relation to the presented study area.

A Complementary Framework

Among the design frameworks existent in the context of Media Architecture and public displays (Fatah gen. Schieck 2006; Fatah gen. Schieck et al. 2009; Dalsgaard & Halskov 2010), the presented research study is primarily concerned with experiential design methodology to develop extended engagement in Media Architecture. It pro-

⁸⁸ For example, through *DGTF – German Society for Design Theory and Research*, as author for *FORM Design Magazine* and as a participant and author of *Design of the Future* symposium and book.

⁸⁹ For example, at the *MA Design Communication* program at ZHdK Zurich.

poses visual communication as reflective action for ownership, complementing existing approaches from architecture and interaction design (Wiethoff 2012; Halskov & Ebsen 2013; Behrens et al. 2015; Wouters 2016).

The contextual situation of any Media Architectural project is unique, and transferability of frameworks and procedures to specific circumstances requires thoughtful consideration. However, the author believes that further systematic research activities are needed to address the challenges of this emerging field. He sees potential in extended exploration of the potentials of integrating the various disciplinary perspectives by working toward design process standards for Media Architecture as a spatial and social experience. While an easy-to-implement reflective design framework such as the one proposed by this study suggests a structured approach to engagement, other contextual settings may reveal additional components as desirable and should be explored in a larger, multidisciplinary context. The provision of the MAA project database as a publicly accessible and editable tool can serve as a next step in this endeavour.

Flexible Integration

Establishing conceptual design workshops with a variety of stakeholders requires extended planning efforts and time. The application of the reflective design framework and the workshops is not bound to precede the implementation phase and could also be realised during later stages of a Media Architecture project. This thesis suggests basing these on the learning cycle approach; regardless of a project stage, the proposed methodology may serve as a helpful tool to connect with various interest groups.

While a broader research with various constellations of stakeholder groups has not been within the scope of this study, it can serve as a research question to extend to a publicly accessible MAA database as digital method platform for Media Architecture design. In a larger study, such a platform allows flexible process integration into existing planning activities without the researcher. At the same time, this could provide a broader range of feedback and usage data for further elaboration of the database and its use of taxonomies and visualisation options.

Long-Term Ownership

The integration of a reflective design process for ownership in urban planning initiatives can be seen as an element of “social oriented corner strategies” to revive urban space (Struppek 2014). In Media Architecture, with its common notion of citizens as

“users”, a reflective design process for ownership links up with trends of reclaiming digital *placemaking* as an engaging tool rather than an industry-oriented usage of smart city products.

Within this research, the developed methods and the resulting methods framework were applied in short-term workshops on a semi-professional/multi-professional stakeholder level. Workshop participants were “expert users” in the Media Architecture context, from architects and (interaction) designers to city administration and project commissioners. However, the inherent connection of DIY strategies and ownership (see 4.3.2) implies an elaboration of the toolset as part of “DIY urbanism” (Struppek 2014; Caldwell & Foth 2014; Foth et al. 2015), which empowers citizens in opposition to “smart” industry-driven innovation. Events and institutions such as the *Media Architecture Biennale*⁹⁰, the *Luminale*⁹¹ in Frankfurt/Main as well as partnering institutions such as the *Media Architecture Institute*⁹² constitute platforms for strengthening this perspective, not only through academic discourse on participation and ownership but also by providing access to large-scale industry partners. Essentially, it is in these partners’ interest to provide sustained experiences with Media Architecture.

Visual Communication

In relation to Media Architecture, aspects of visual communication usually refer to its visual appearance in urban space (Jewitt & Triggs 2006). The research presented in this study emphasises reflective visualisation practices as part of a conceptual experience of Media Architecture. It provides visual tools for reflective stakeholder discourse, informing a participatory design process as well as the actual design outcome.

This approach should be further established as an opportunity within the discipline to design for inter-cultural communication and engagement based on visual communication. The researcher aims to explore this aspect further with a study on design for methods frameworks in visual communication practice with media design students at DHBW University⁹³. A practical research seminar series is intended to familiarise and explore visual design strategies for spatial facilitation. Building on the experiential reflective design methodology developed in this PhD research, this will be aimed at applying the strategy on a broader context of digital spatial communication. Addi-

90 <http://mab16.org>

91 <http://www.luminale.de>

92 <http://www.mediaarchitecture.org>

93 The researcher is an educator in the Media Design department at this institution.

tionally, public student presentations at industry events on spatial communication such as the *VLOW* conference⁹⁴ or *Raumwelten*⁹⁵ will provide opportunities to explore and disseminate this perspective further in a multidisciplinary professional context.

94 <http://www.vlow.net>

95 <http://www.raum-welten.com>

5.5 Final Remarks

This research set out to investigate how experiential and visual design methods can help create multi-stakeholder participation and engagement in Media Architecture. When the researcher began this part-time PhD eight years ago, the field of research was (and still is) part of relatively new, rapidly changing technological and multidisciplinary territory. Knowledge gaps exist specifically in design methodologies for sustained visual experience and communication. Despite an expansive study period and a growing body of research in the field, the specific research question and aim to provide new knowledge through the development of a practice methodology for stakeholder integration is still relevant, leading to a new visual communication approach to designing Media Architecture experiences. The developed methods and findings of the study are largely technology-independent and thus ensure enduring applicability of the research to the subject.

Originating in first-hand experiences from the author's professional practice, the problem of relevance in Media Architecture as an area of visual communication has been proven as a general issue. The outcomes of this study provide an opportunity to promote methodological design discourse in this highly dynamic media context. The study contributes to new knowledge in Media Architecture by presenting:

- A definition of *Media Architecture Design as Shared Experience*, contextualising it as conceptual spatial and experiential entity and providing visual literature, practice mappings and a comprehensive taxonomy for Media Architecture practice.
- An *Experiential Design Methodology for Ownership*, building on experiential learning and applied in a prototypical collaborative methods framework for reflective visual contextualisation, ideation and prototyping in the early conceptual design phase (i.e., MAA database and workshop format using participation, visualisation and prototyping methods).
- *Visual Communication as Reflective Strategy* in multi-stakeholder settings, promoting visual tools for collaborative investigation, self-reflection and contribution, thus providing a new discursive approach, facilitating participation and extending the experience of Media Architecture in multi-stakeholder situations (i.e., visual schemas, visual workshop methods).

The outcomes of this study contribute to the growing research debate on conceptual relevance, situated-ness and civic engagement in Media Architecture. As a visual design approach, the study hopes to provide a sustainable communication perspective for future integration with existing frameworks from human-computer-interaction and architecture. The cross-sectional nature of the research area indicates a range of additional opportunities for ongoing study to further explore the discursive potential of visual communication in Media Architecture experiences.

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7 APPENDIX

7.1 Mapping the Research

Over the course of the research, schematic visualisations were used to map the research process as well as relevant contextual fields of study. Their design informed the structure of this thesis in establishing the three main chapters (Chapter 2,3,4), each combining theory informed research with a dedicated section on “Reflections through Design Practice”. For details see *Introduction Section 1.5* and the schematic visualisation on the right.



Illustration 7.1: Overview: Mapping the Research Process. The structure is showing the three main areas of study and how they are interlinked, both in terms of theoretical and practical research activities.

7.2 Online Media Architecture Database

7.2.1 Media Architecture Taxonomy

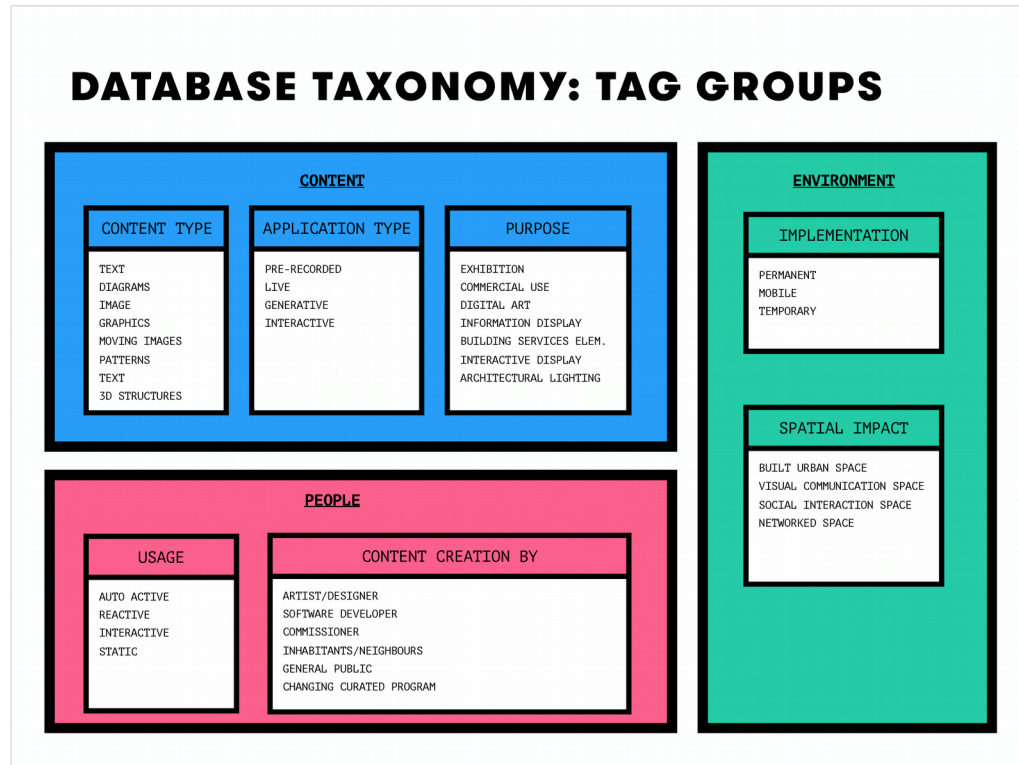


Illustration 7.2: MAA Taxonomy: overview of tag groups

TAXONOMY REVIEW: GENERAL SPECS

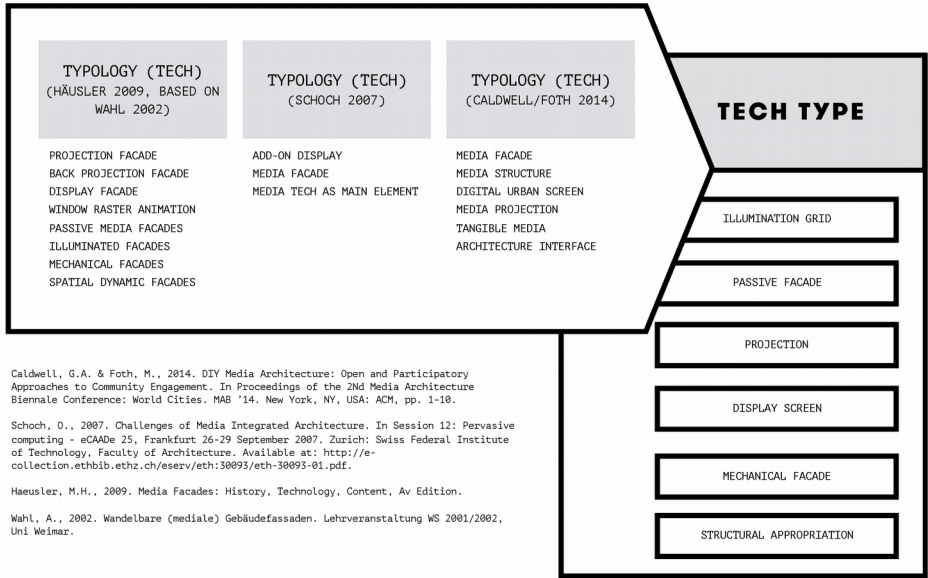


Illustration 7.3: MAA Taxonomy: related sources for general specifications: "Tech Type"

TAXONOMY REVIEW: GENERAL SPECS

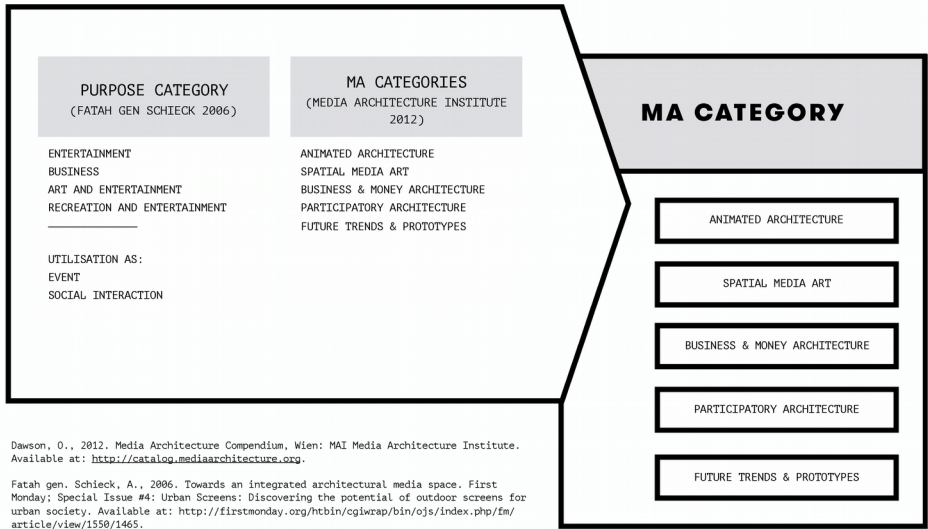


Illustration 7.4: MAA Taxonomy: related sources for general specifications: "MA Category"

TAXONOMY REVIEW: PEOPLE

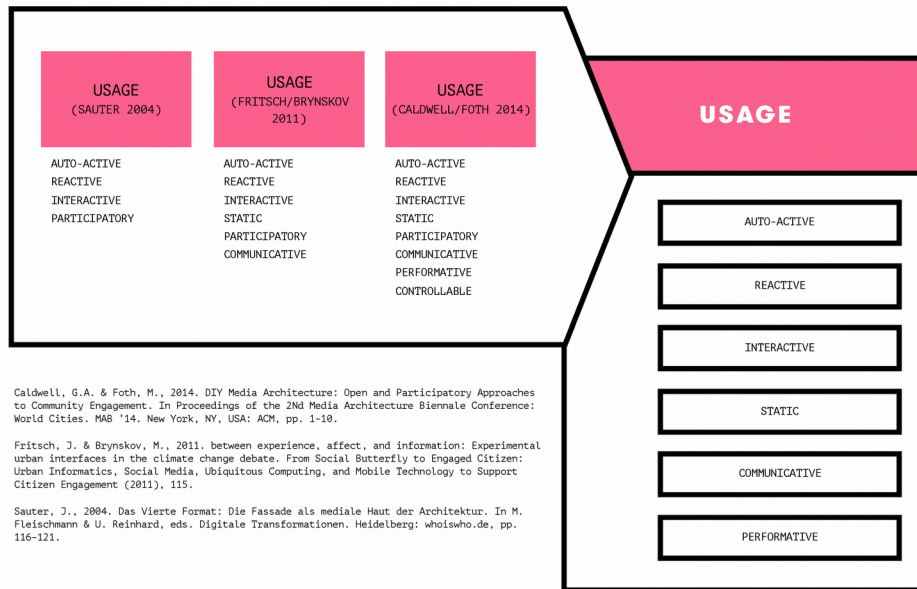


Illustration 7.5: MAA Taxonomy: related sources for people-related category: "Usage"

TAXONOMY REVIEW: PEOPLE

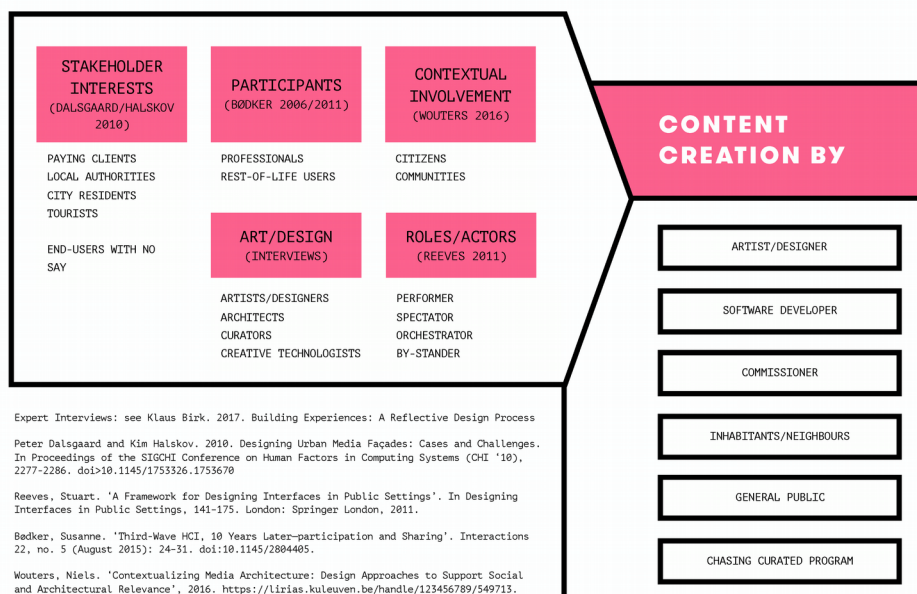


Illustration 7.6: MAA Taxonomy: related sources for people-related category: "Content Creation"

TAXONOMY REVIEW: ENVIRONMENT

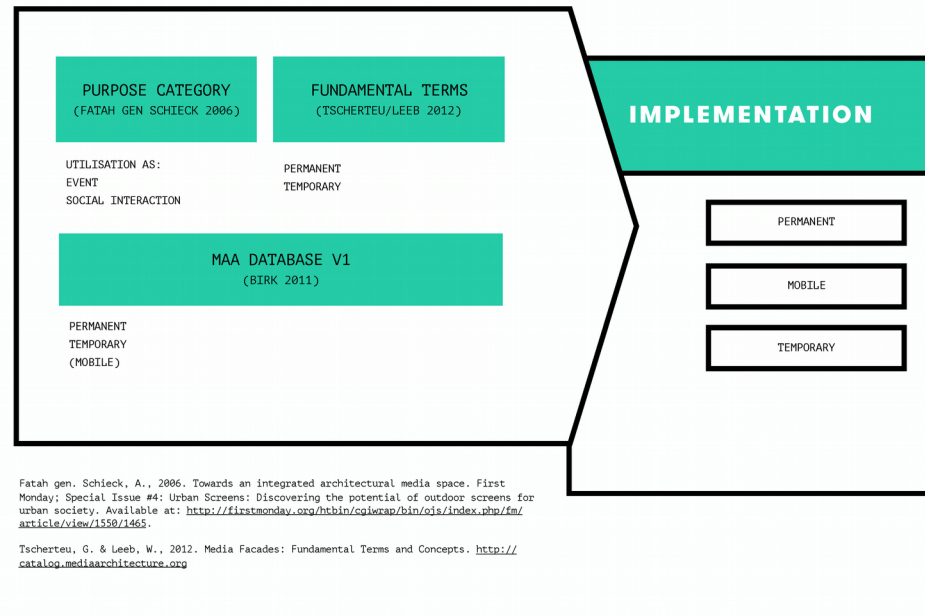


Illustration 7.7: MAA Taxonomy: related sources for situation-specific category: "Implementation"

TAXONOMY REVIEW: ENVIRONMENT

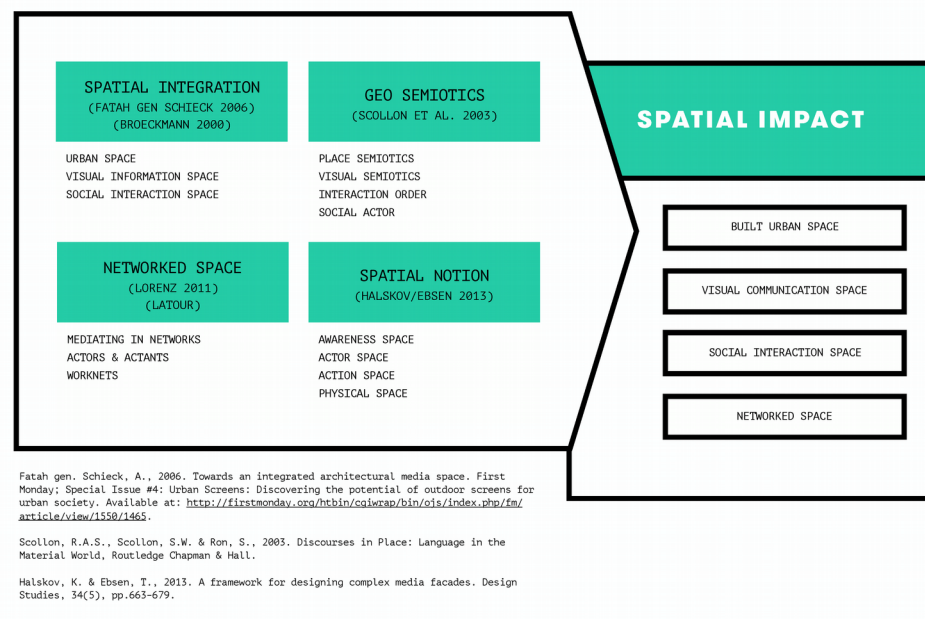


Illustration 7.8: MAA Taxonomy: related sources for situation-specific category: "Spatial Impact"

TAXONOMY REVIEW: CONTENT

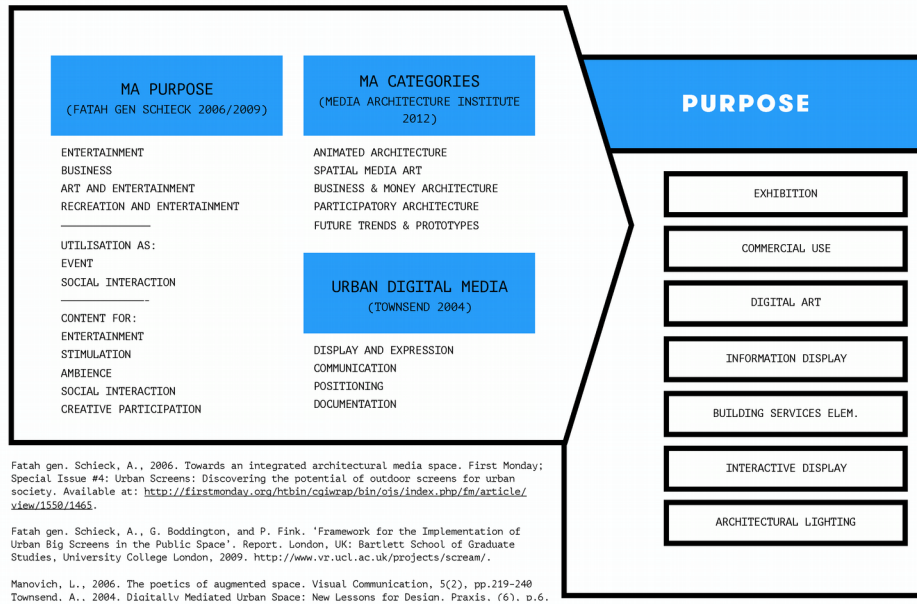


Illustration 7.9: MAA Taxonomy: related sources for content-specific category: "Purpose"

TAXONOMY REVIEW: CONTENT

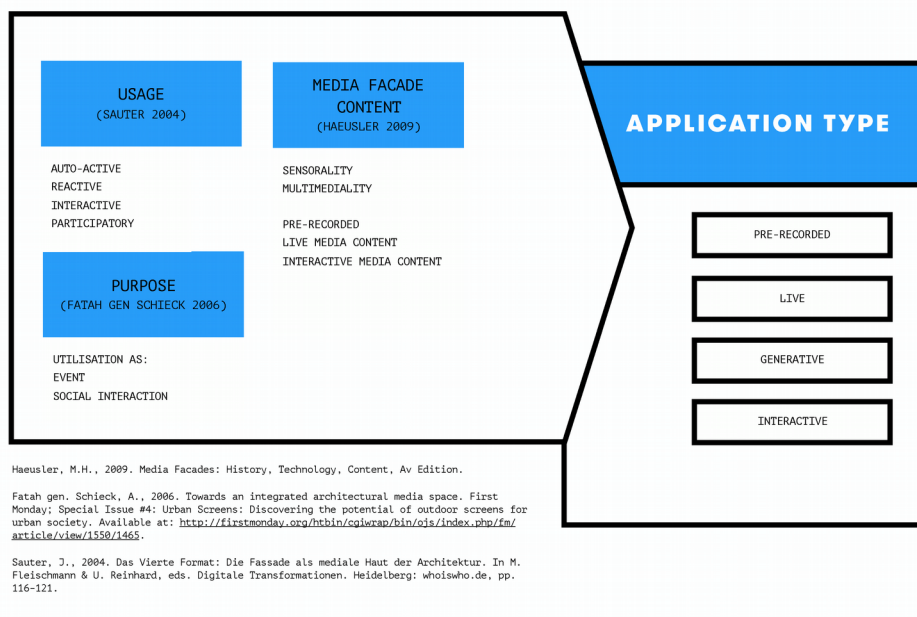


Illustration 7.10: MAA Taxonomy: related sources for content-specific category: "Application Type"

TAXONOMY REVIEW: **CONTENT**

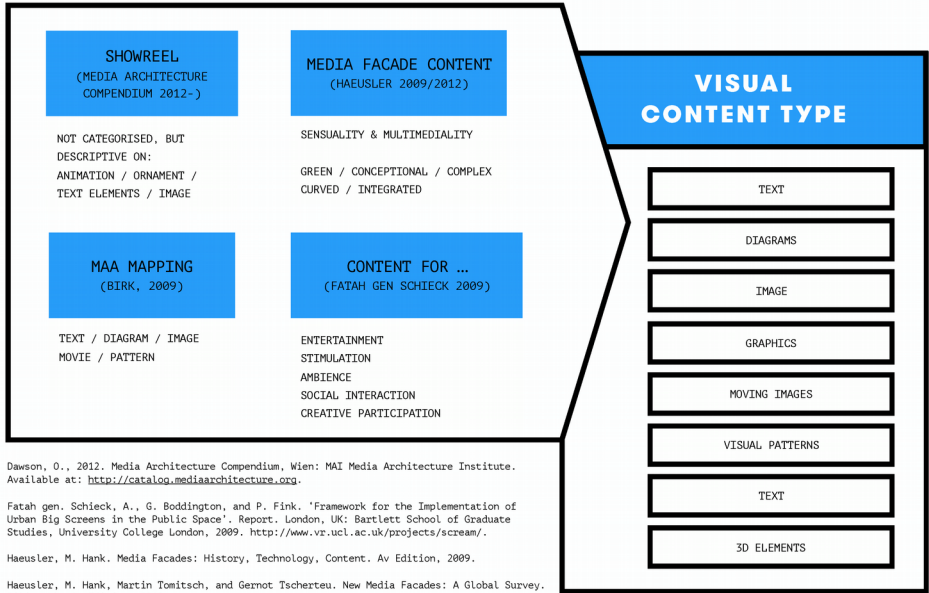


Illustration 7.11: MAA Taxonomy: related sources for content-specific category: "Visual Content Type"

7.2.2 Media Architecture Database (V01)

Media Architecture Database

Thumbnails Timeline **Locations**

97 Items

Map data ©2011 Basarsoft, Europa Technologies, Geocentre Consulting, Tele Atlas, Transpavicom, Terms of Use

Analogue Art Architectural Lighting Building Services/Systems Element Commercial Display Corporate Lighting
Digital Art Dynamic Facade Artwork Entertainment Exhibition Display Furniture Hack Information Display Interactive
Display Intervention Mystery Hunt Projections Prototype Scenography Sculpture Shading Smart Surface Stage Design Structural Concept Sunscreen
Tourism Spectacular Urban Intervention

Search

Author/Artist	City	Country	Implementation
3	1 -	1 -	7 Mobile
1 3deluxe	1 Aarhus	6 Austria	1 Model
1 Aconci Studio	1 Amsterdam	8 Belgium	56 Permanent
1 Adrián Acosta	1 Athens	1 Brazil	42 Temporary
1 ag4 media facade GmbH	1 Barcelona	4 Canada	

Type of Content	Type of Application	Main Purpose of Installation	Type of Technology
1 3d Facade	35 Generative	1 Analogue Art	2 (missing this field)
1 3D Structures	29 Interactive	7 Architectural Lighting	18 Appropriation
2 Coded Color	55 Live	31 Building Services/Systems Element	1 Augmented Reality
2 Color	1 Manual	27 Commercial Display	1 Building facility lighting system
2 Colour	43 Pre-Recorded	1 Corporate Lighting	13 Display screens

Type of Use	Who is Responsible For Content?	Main Spatial Impact	Relevance
52 Autoactive	1 Academic Institution	67 Built Urban Space	14 (missing this field)
28 Interactive	2 Advertiser	36 Social Interaction Space	20
3 Manual	17 Architect	69 Visual Information Space	1 2d-7
45 Reactive	72 Artist/Designer		2 3D LED grid
4 Static	1 Built Environment		2 3d projection

Illustration 7.12: First version of the Media Architecture database, built with Exhibit. The map view visualises the geolocation of projects in the database

Media Architecture Database

Thumbnails Timeline Locations

97 items

sorted by: start and label; then by: grouped as sorted

Thumbnail overview of projects in the database. The results can be filtered through the faceted search scrollboxes and a fulltext search field.

Faceted Search:

Author/Artist	City	Country	Implementation
3	1 -	1 -	7 Mobile
1 3dellave	1 Aarhus	6 Austria	1 Model
1 Accorci Studio	1 Amsterdam	8 Belgium	56 Permanent
1 Adrien Accorci	1 Athens	1 Brazil	42 Temporary
1 ag4 media facade GmbH	1 Barcelona	4 Canada	

Type of Content	Type of Application	Main Purpose of Installation	Type of Technology
1 3d Facade	35 Generative	1 Analogue Art	2 (missing this field)
1 3D Structures	29 Interactive	7 Architectural Lighting	16 Appropriation
2 Coded Color	55 Live	31 Building Services/Systems Element	1 Augmented Reality
2 Color	1 Manual	27 Commercial Display	1 Building facility lighting system
2 Colour	43 Pre-Recorded	1 Corporate Lighting	13 Display screens

Type of Use	Who is Responsible For Content?	Main Spatial Impact	Relevance
52 Autocative	1 Academic Institution	67 Built Urban Space	14 (missing this field)
28 Interactive	2 Advertiser	36 Social Interaction Space	20
3 Manual	17 Architect	69 Visual Information Space	1 2d-7
45 Reactive	72 Artist/Designer		2 3D LED grid
4 Static	1 Built Environment		2 3d projection

Search

Search field:

Illustration 7.13: First version of the Media Architecture database. Thumbnail overview of projects in the database. The results can be filtered through the faceted search scrollboxes and a fulltext search field.

7.2.3 Revised Prototype for Mobile Use (V02)

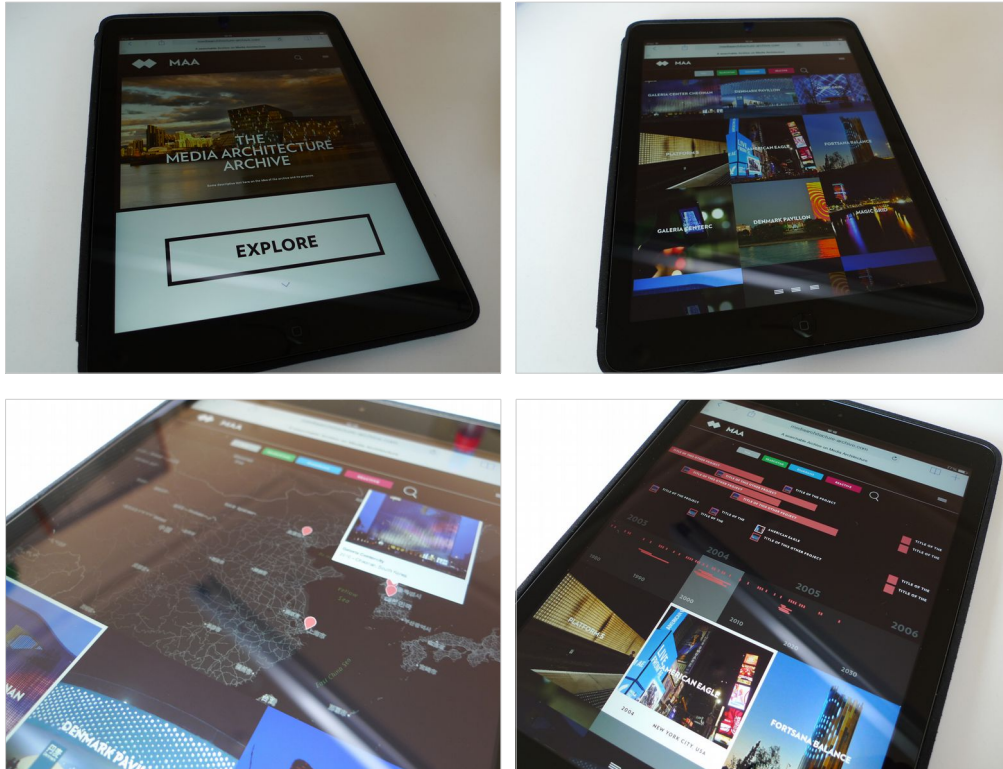


Illustration 7.14: MAA interface study for mobile use. Invasion prototype

- Responsive web-based layout for flexible use on personal devices during workshops
- Interface layout focusing on touch-based interaction and prominent visual representation of projects
- Additional functionalities for visual grouping, and sorting of projects and their attributes
- Visual browsing of project relations through added views, leveraging interactive mapping visualisations of projects and attribution

7.2.4 Functional Prototype for Participatory Use in Workshops (V03)

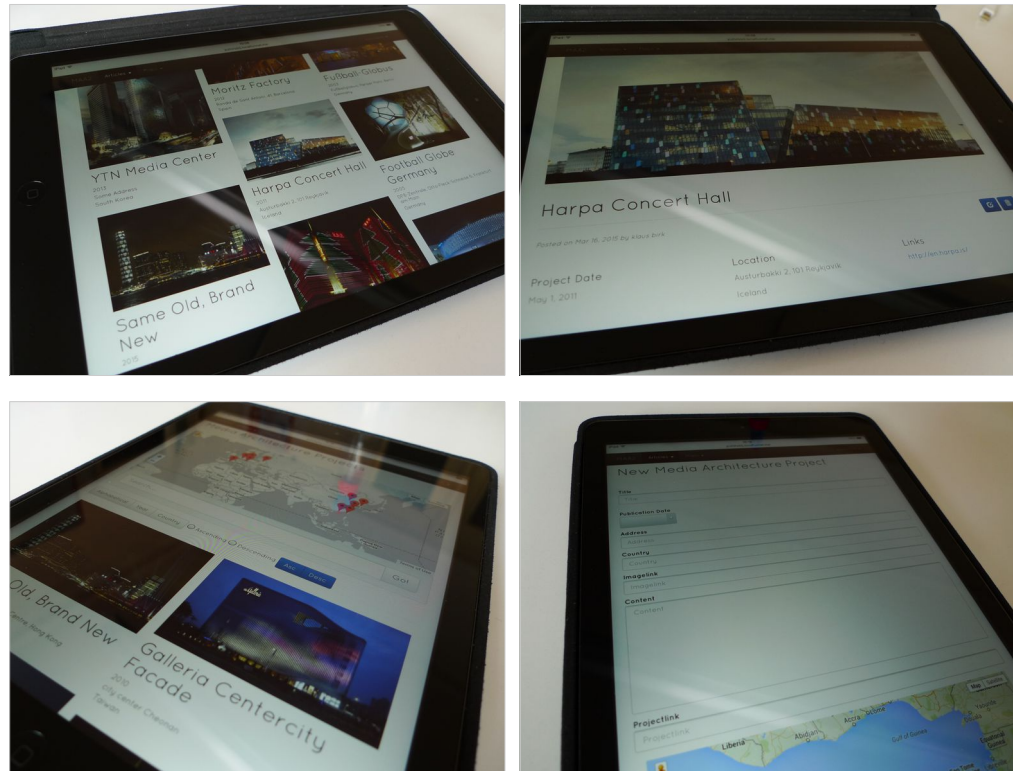


Illustration 7.15: MAA functional study with responsive frontend. Node.js application based on MEAN framework

- Prototype using flexible web-based application stack MEAN (MongoDB, Angular, Express, Node)
- Included user-administration for participatory integration of application within workshops (guest accounts for adding individual projects)
- Fast and flexible use of instant filtering over database
- Running on every modern browser provided with individual mobile devices
- Interactive svg-based data visualisation (timeline, dendrogram)

7.2.5 Design Prototype (V04)

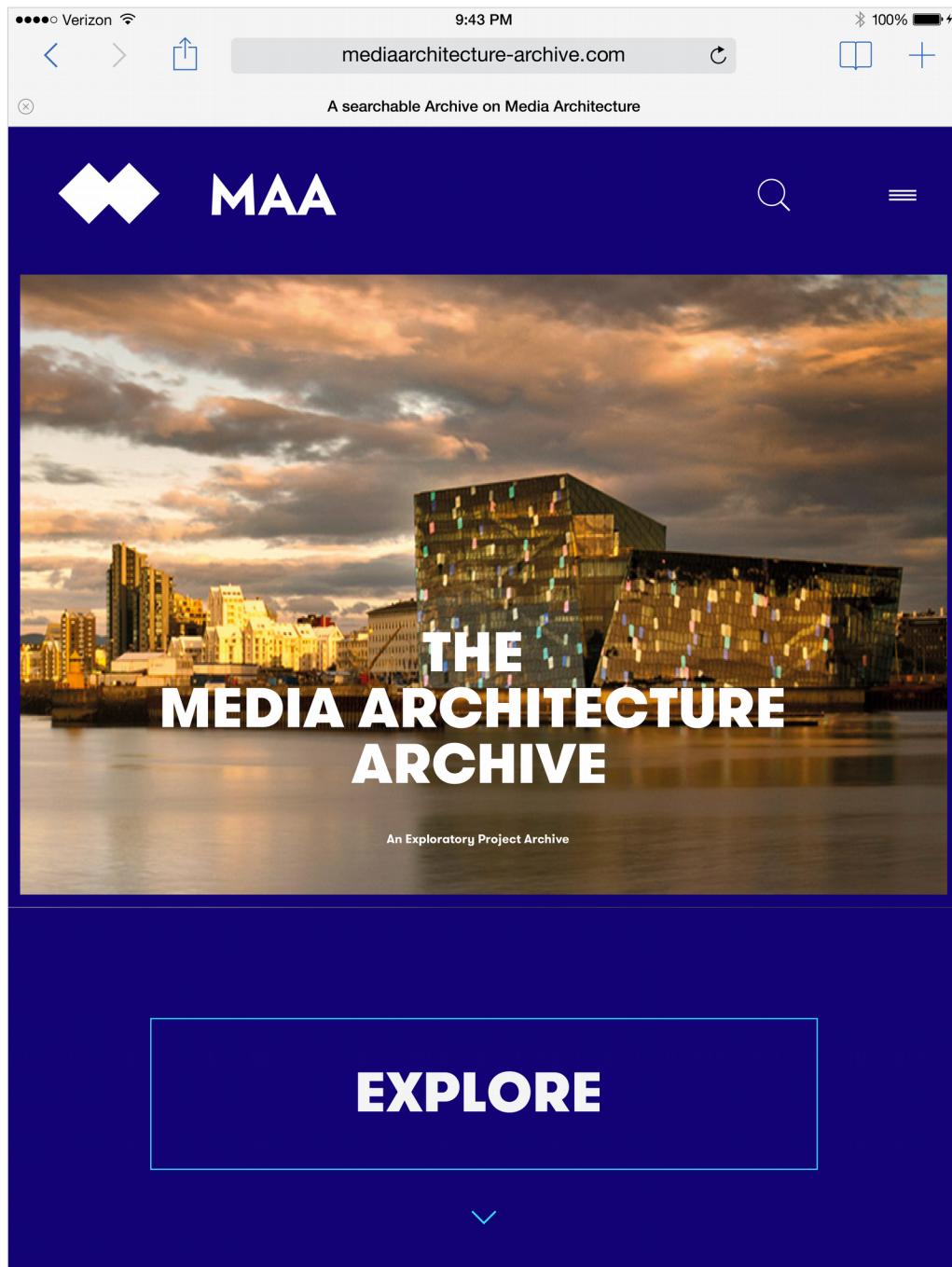


Illustration 7.16: MAA Design Prototype – Responsive Interface for mobile devices — Frontpage

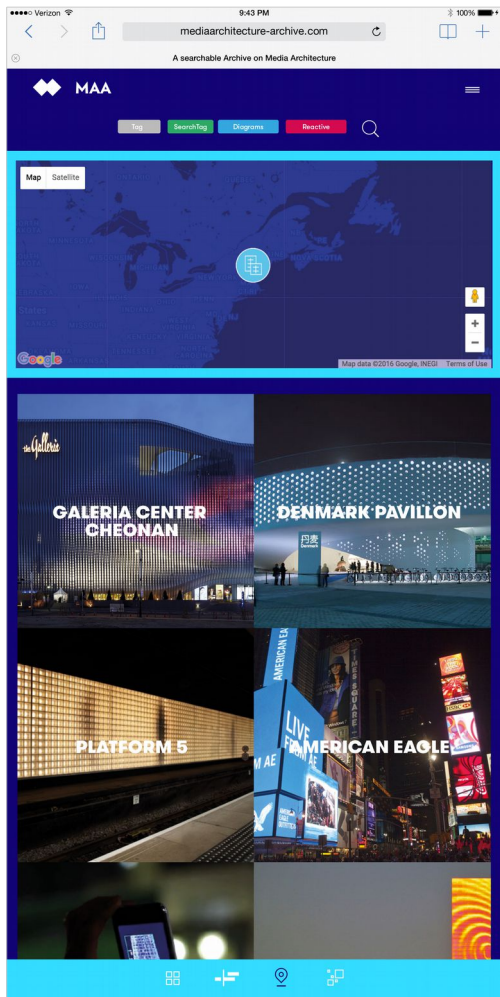


Illustration 7.17: MAA – Design Prototype: Map view

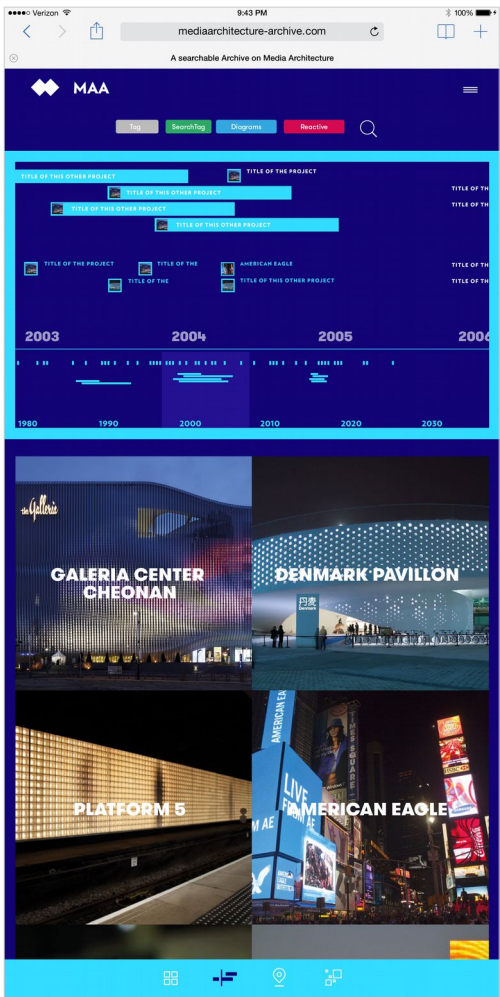


Illustration 7.18: MAA – Design Prototype: Timeline view



Illustration 7.19: MAA – Design Prototype: Project view

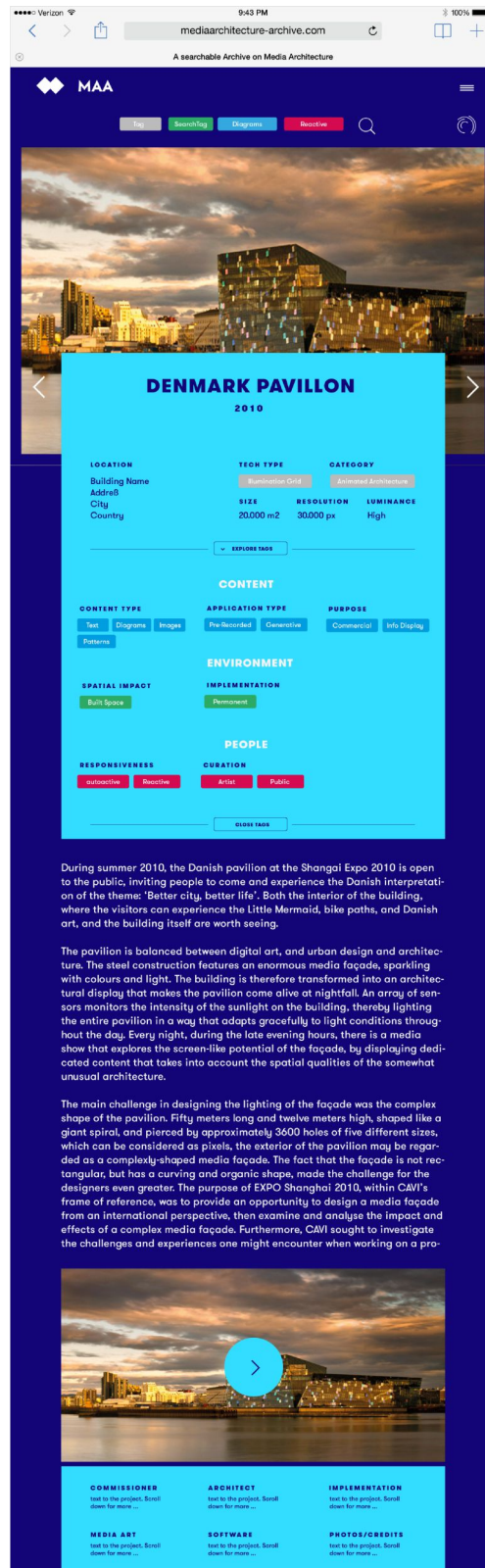


Illustration 7.20: MAA – Design Prototype: Project view with tag structure

Verizon9:43 PM100%mediaarchitecture-archiv.comA searchable Archive on Media Architecture

EDIT PROJECT

PROJECT TITLE

DATE

Start DateEnd DateTech TypeMAI Category

LOCATION

Choose Address or Location on Map

PROJECT IMAGE

Image Link / URL

PROJECT VIDEO

Youtube / Vimeo Link

PROJECT WEBSITE

Website Link

PROJECT DESCRIPTION

Some descriptive information

SIZE (M2)

20.000

LUMINANCE

30.000

RESOLUTION (PX)

30.000

TAGS

CONTENT

CONTENT TYPE

TextDiagramImageVideoPatternSoundOther

APPLICATION TYPE

Pre-RecordedGenerativeLiveInteractive

PURPOSE

CommercialInfoBuilding/SysArtInteractionExhibition

ENVIRONMENT

IMPLEMENTATION

PermanentTemporaryMobile

SPATIAL IMPACT

Built Urban SpaceVisual Information SpaceSocial Interaction Space

PEOPLE

TYPE OF USE

AutoactiveReactiveInteractivePassive

CONTENT CURATION BY

Artist/DesignerSoftware DeveloperHardware DeveloperInhabitantsArchitectComissionerArtistic CuratorPublicOther

BUILDING PROFILE

COMMISSIONED BY

Kumho Aialona GroupALHong Kong Tourism BoardJack InvestmentKumho Aialona GroupMott MacDonald des Arles 2008Symphony of LightsWOHA ArchitectsZZ TOPZZZ

ARCHITECTURE BY

RealitiesUnitedWOHA ArchitectsUNALMVRDV Archite

FAÇADE IMPLEMENTATION

RealitiesUnitedWOHA ArchitectsUNALAdd ...

SOFTWARE BY

RealitiesUnitedWOHA ArchitectsUNALAdd ...

CREDITS

RealitiesUnitedAdd ...

DISCARDUPDATE

Illustration 7.21: MAA – Design Prototype: Editor screen

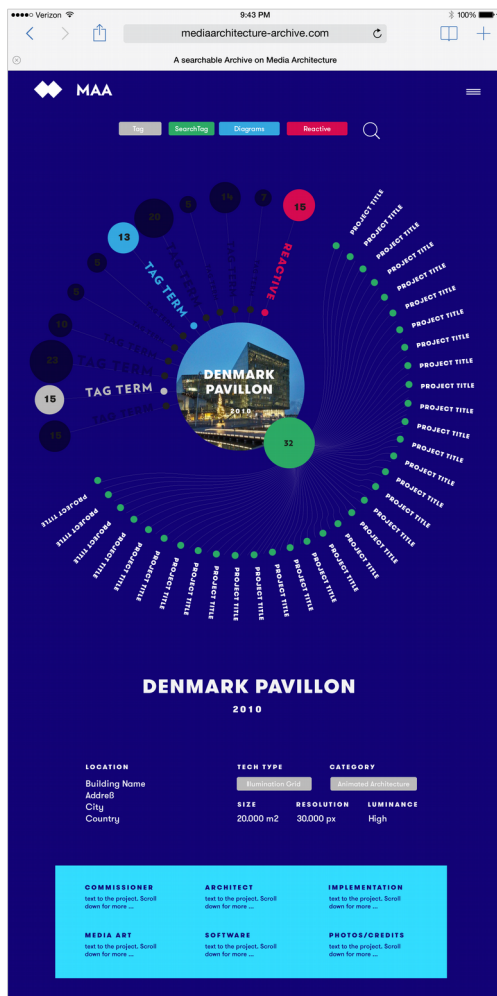


Illustration 7.22: MAA – Design Prototype: Radial Map

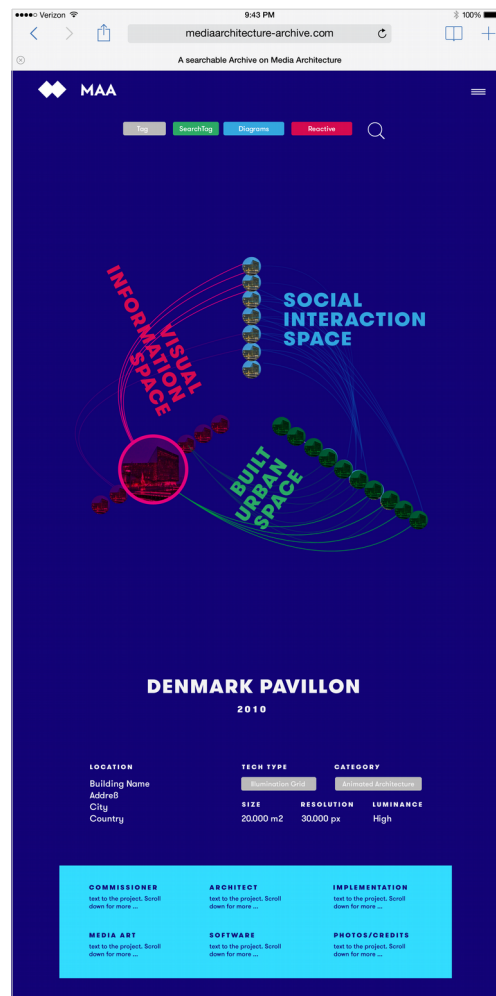


Illustration 7.23: MAA – Design Prototype: Experimental network visualisation



Illustration 7.24: MAA final visual prototype (Invision)

7.2.6 Node Application Prototype

Local server installation of the Node.js-based application prototype, using the MEAN development stack.

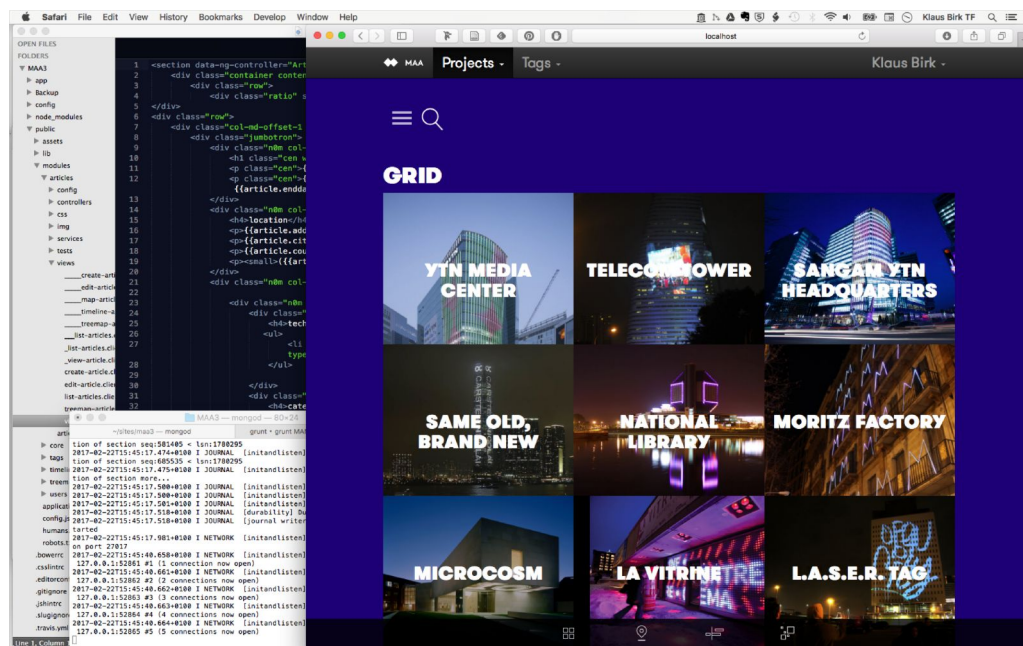


Illustration 7.25: Node.js application prototype: Project Grid view

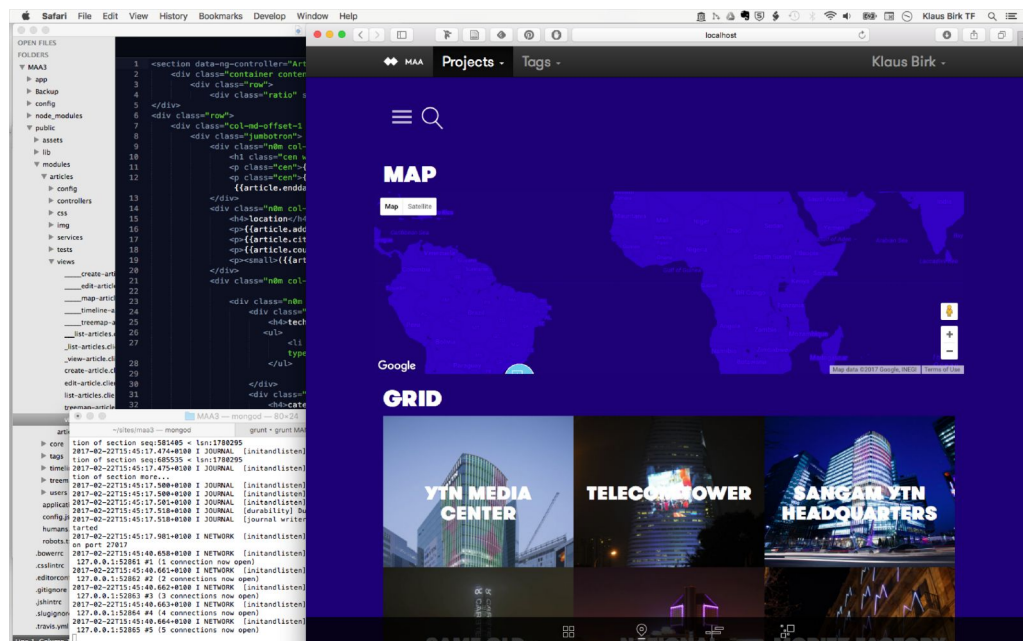


Illustration 7.26: Node.js application prototype: Project Map & Grid view

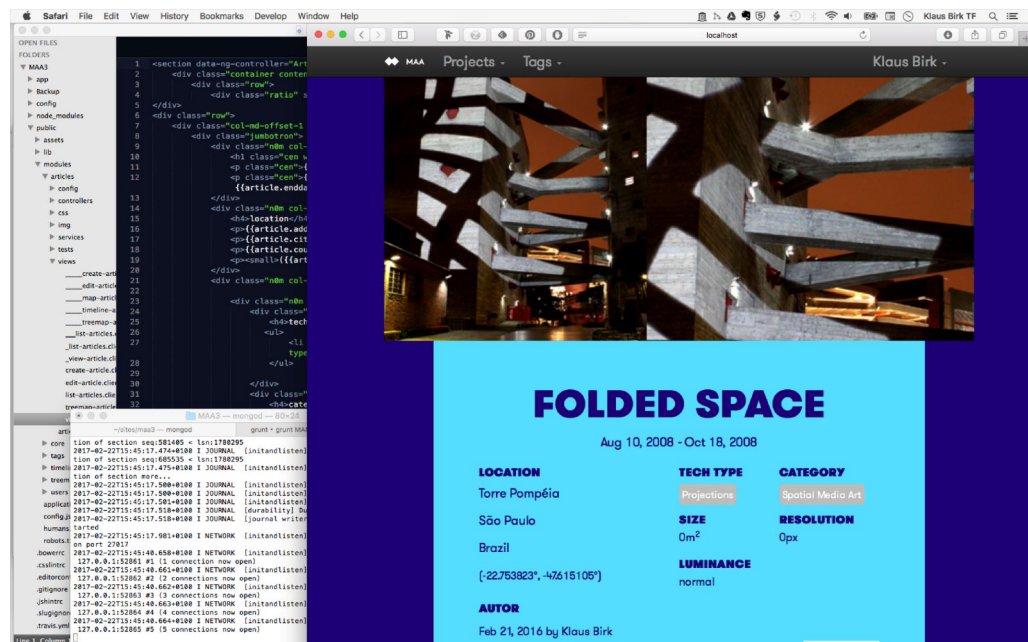


Illustration 7.27: Node.js application prototype: Project detail view

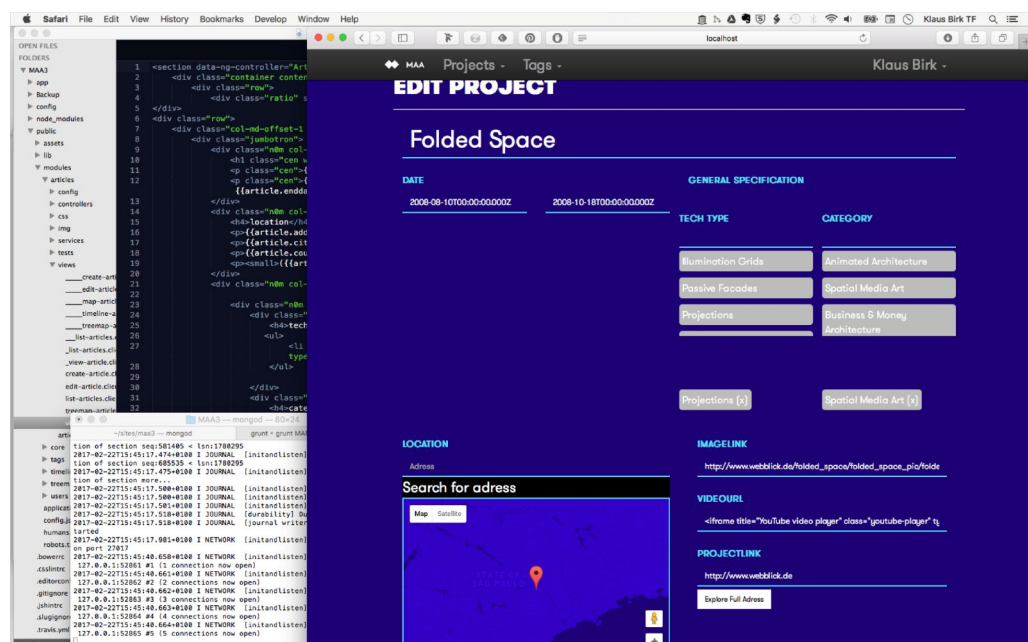


Illustration 7.28: Node.js application prototype: Edit screen

7.3 Visual Thinking Templates – Workshop

7.3.1 Overview

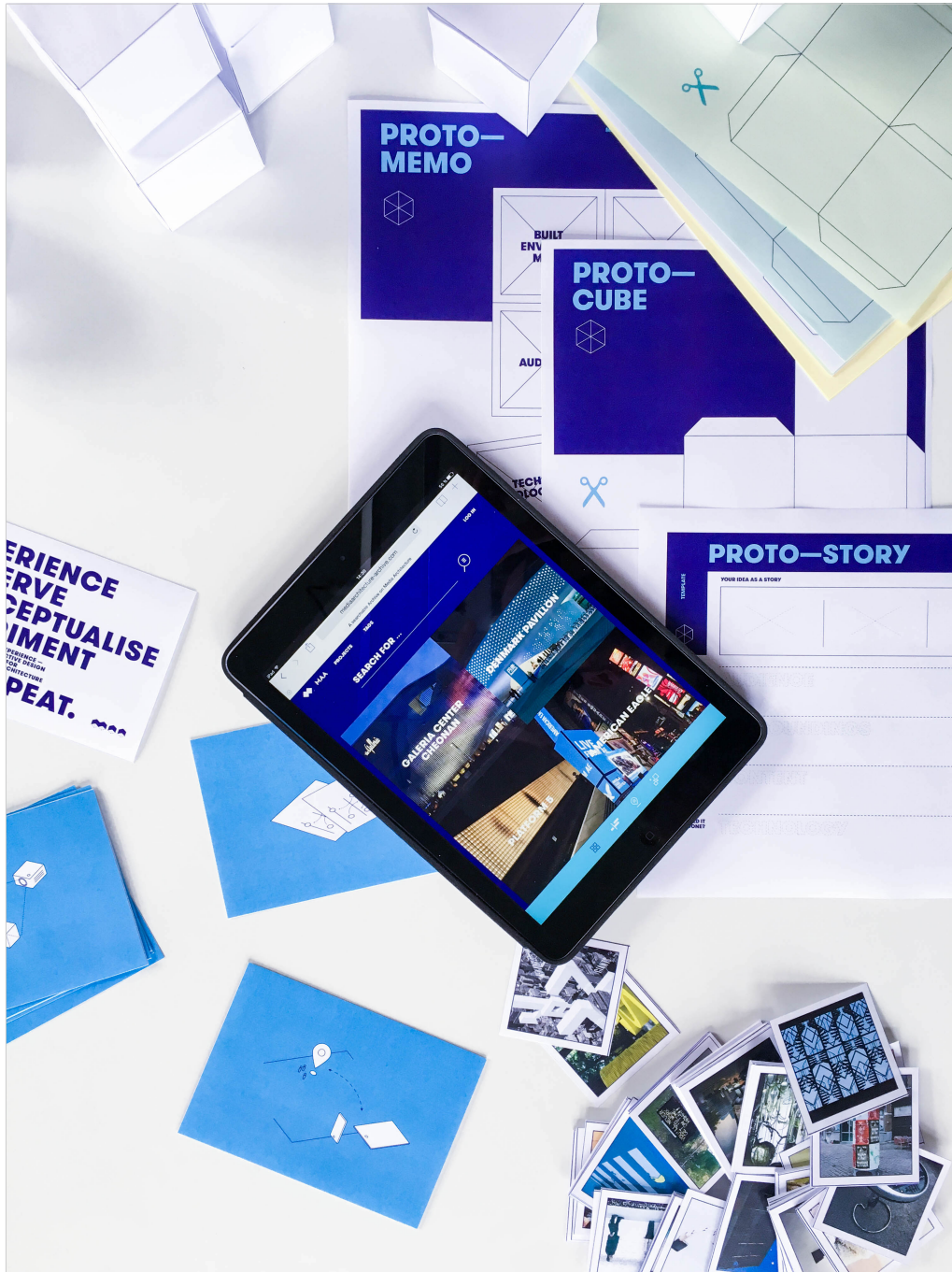


Illustration 7.29: Sample workshop material based on the methods framework

7.3.2 Workshop Info Package and Print Templates



Illustration 7.30: Sample workshop material: Info poster and postcards, plus A4 print templates for self-printing



Illustration 7.31: A3 info poster: "A Reflective Design Toolkit for Media Architecture" explaining the basic principles of the methods framework (front)



Illustration 732: A3 info poster: "A Reflective Design Toolkit for Media Architecture" explaining the basic principles of the methods framework (back)

7.3.3 Print-Out Templates for Collaboration

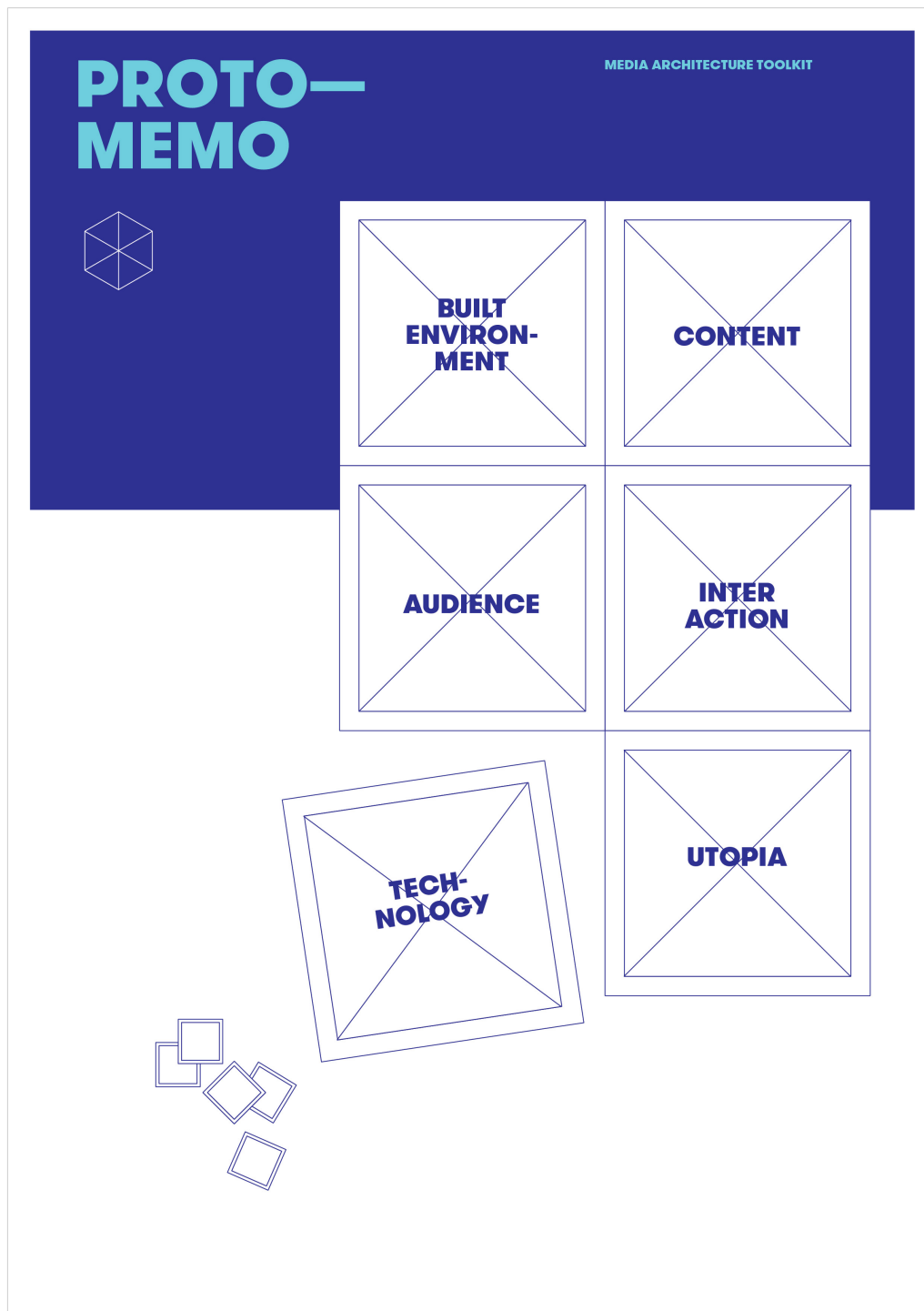


Illustration 7.33: Workshop template for self-printing: Ideation Memo Cards. The template can be populated individually, e.g. by using specific online repositories such as flickr.com or commons.wikimedia.org

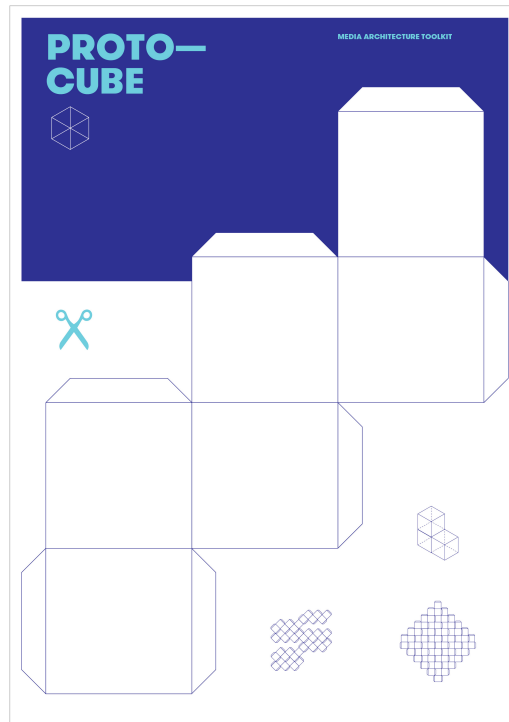


Illustration 7.34: Workshop template for self-printing:
Protocubes for simple paper prototyping

PROTO-STORY MEDIA ARCHITECTURE TOOLKIT

TEMPLATE

YOUR IDEA AS A STORY

WHO ACTS?
WHO CARES? AUDIENCE

WHAT'S
HAPPENING
HERE? SURROUNDINGS

WHAT DOES
IT SAY? CONTENT

HOW COULD IT
BE DONE? TECHNOLOGY

Illustration 7.35: Workshop template for self-printing: Story Framing – narrative mapping of initial visual ideas

7.4 Expert Interviews

7.4.1 Interview Structure/Semi-structured

1010_interview_lab{au}

Els Vermang Lab[au], Brussels Skype Interview (Semi-Structured) 05.11.2010, 00.00h			
Introduction			
Who is Lab[au] ?			
How would you describe the studio's philosophy/modes of operation/self-conception?			
You work along 50 called Systems: generative, performative, analytic, reactive, interactive, connective			
What are the characteristics of a typical Lab[au] project?			
When is a project successful? Which are the criteria being applied?			
Specific project:	Awareness	Problems	Suggestions
Idea/Design concept			
You work/have been working on a project series called "Who's afraid of RGB" for the Dexia Tower in Brussels in 2006/2007. What was the basic idea behind the installations? (Chrono Tower, Weather Tower, Touch), also Binary Waves, Spectra[au]m			
What purpose serves the mediated architectural aspect within the concept?			
architectural lighting, commercial display, corporate element, digital art, entertainment, information, intervention, tourism...			
What does this specifically mean for the types of media being applied?			
Types of application			
generative, interactive, live, prerecorded, static...			
Types of content			
diagrams, abstract visuals, images, moving images, patterns, text, ...			
Did you have specific usage scenarios in mind?			
autoactive, interactive, reactive, static, tangible...			
What effect/impact had the project in terms of its spatial/urban context?			
as urban, information and social interaction space			
Are there any historic implications?			
Were there any official/administrative guidelines/specifications to follow?			
Project Data			
Time Frame		Pitfalls?	
What was your time frame for planning / designing / execution / installation / maintenance?			
Commission			
Who was the commissioner?			
Was there a kind of selection process prior to being commissioned? a competition? a request for proposals? invited project?			
Is the mediated architectural aspect/facade a separate commission, or is it part of a larger design project?			
Stakeholder			
What parties/stakeholders are involved in the project?			
How do you include them - if at all - in the planning process?			
Are the signs/tendencies of a desire to be involved at all in the planning process? requests for participatory inclusion?			
Budget (%)		Pitfalls?	
can you roughly outline the budget for the project?			
In relation to the building/larger project?			
Is there a separate budget planning for the development of interaction concepts?			
is there a separate budget planning for software development/IT?			
is there a separate budget planning for content development?			
Design Process			
How did you set up the project team?		Pitfalls?	
What team size? how many members?			
What disciplines?			
Are you generally working in subdivisions or units?			
For what kinds of subjects/project parts are you working with external specialists/freelancers?			
How are responsibilities being allotted/shared? who is responsible for what?			
What characterizes your conceptual design process?			
Which are the key aspects: do you see yourself as artists? Are you design-driven, technology-driven?, are you user-driven?			
How is your work process different from general lighting / mediated spatial design?			
Which roles do spatial usage, location and/or flexibility/adaptability play in the project?		Pitfalls?	
Are there any preconception/requirements for later usage scenarios of the project?			
What sources of inspiration, tools or scenarios are you using for the conception phase?			
site history, site usage, building usage/architecture/interior...			
Other Media facade/architecture projects			
state of the art technology			
Collaging/Layering/Complexity?			

Illustration 7.36: Example of semi-structured interview questions. Here: LAB[AU]: page 1 of 3

7.4.2 LAb[au] – Els Vermang, Founder

“LAB[au] is a group of artists, Manuel Abendroth, Jérôme Decock and Els Vermang, located in Brussels. Their artworks share characteristics with conceptual art, system art and concrete art - though actualised with contemporary materials, techniques and formats. They have a strong tendency towards a reductionist, serial and elementary language, manifested in their use of colour, geometry, light and motion. LAB[au] questions contemporary aesthetics, confronting them with algorithmic logic.”

<http://www.lab-au.com/abstract>

Transscript of Skype Interview – LAB[au] – Els Vermang, Founder

5th November 2010

First question: Who is Lab AU #00:01:18.6#

LAB[au] is an arts studio which has been founded in 1997 with the aims to investigate the transformation of architecture and urbanism under the influence of new technologies. It is what was formerly called "trans-architecture" which in our case is much more situated in what is called the "electronic arts scene". Though it still has a very special foundation. It has a much more artistic application I would say if you would compare it to other figures of this original trans-architectural field. For us, this results in different types of installations. We have on the one hand the large-scale urban installations and on the other hand we have the gallery scaled objects. We have a different range of media we are applying, so we are working as much with kinetics, sound, light, printed matter. but most of all what is distinguishing our approach from others within the trans-architecture or electronic arts field is our very systemic approach. we are subdividing our projects within six different categories: generative, analytic, reactive, interactive, connective, performative. nowadays we are mainly active within the generative and reactive field. we touch interactive projects. but its less nowadays. #00:03:40.8#

How do you distinguish between reactive and interactive? #00:03:51.5#

Interactive is where there is an active role of the spectator, whereas in reactive projects, there is a passive role. I'm gonna give you an example. Interactive is really consciously manipulating to have a certain feedback between the human and the machine, whereas in the case of the reactive, there is the unconsciously affecting of certain processes carried out by machine. For example you pass by a sensor, that is a passive role, while touching a touch screen is an active role. Passive in this sense is reactive, where active in that case is interactive. #00:04:43.3#

#00:04:43.5#

What are the typical characteristics of a LAB[au] project - if there are any? #00:05:06.1#

Well, I think I just answered that question I think. We have a very systemic approach and a special thinking which is at the foundation of our work. I think these are very much describing the characteristics. #00:05:21.5#

When would you think a project is successful. What kinds of criteria do you apply for a successful project in your view. #00:05:38.3#

That's a difficult question. For me personally a project is successful when I have as much satisfaction as possible out of it. But of course this is completely neglecting the reaction of a public in there. I think we have in the first place to make a distinction between subjectively and objectively successful project. I guess, objectively successful is one where you somehow managed to give the best answer to the context provided. This best answer can have its results on the level of the amount of visitors as much as it can be and hopefully can have a certain amount of satisfaction at the side of the people who were actually inviting you to start the project in the first place. If it wasn't yourself anyway. #00:06:50.6#

So do you do a lot of self initiated projects? #00:07:02.1#

Difficult to say would be the balance. Most projects - 90% - are somehow the result of a certain research we have been carrying out previously. That means we have a constant short-list of projects we would love to create, but which we not necessarily are able to create due to financial or other conditions. But sooner or later a certain context comes along which enables you to carry out one or another of these short-listed projects. Where does a project actually start to exist would be a relevant question here. Say for example you have a certain idea which is getting mature and becomes a real project in the sense of carried out prototyping and scenario

graphy. But it is very much possible that you are not able to really create the project because of timing or financial conditions. Then there might be a person, a client, collector, curator commissioning a piece, where you have the impression that this project could fit into the context then that's a good moment to start it. #00:09:00.6#

Let's talk about a specific project in your series "Who's afraid of RGB". It is one of the projects you have been doing for the Dexia tower in Brussels. Was there a central basic idea behind the series of installations (Chrono Tower, Weather Tower, Touch...), or was it a sequence of installations that were sort of separate from each other? #00:09:39.3#

Actually originally we have carried out a design philosophy where we distinguished a series of interactive, generative and performative projects. The generative art works were meant to be the permanent artistic elements. The performative ones would be carried out in accordance to their national, international and cultural agenda. The interactive ones were meant to be temporary for the end-of-year period to have actually every year from mid-December to mid-January an interactive project carried out for the Dexia tower. So it was not innocent. #00:10:49.7#

In terms of purpose of the mediated architectural aspect within the concept, would you say it was more or less architectural lighting, was it a commercial display, was it a corporate element, digital art, entertainment, information, intervention? #00:11:07.6#

Originally it was of course a corporate element. Dexia is transnational, it's a bank. It somehow was their new way of presenting their image. It's a kind of branding element for them if you ask me. But actually to avoid that it would become a real corporate identity we managed somehow to convince the bank that there is an alternative to rather uninspired light animations. So that is why there was an opt for artists working on this installation. So originally corporate element, then ideally an infrastructure for art. #00:12:16.9#

#00:12:13.4#

So in terms of types of media being applied - you actually mentioned them beforehand: generative, interactive. Was there some sort of live-element in there as well, apart from the touch project? #00:12:43.9#

The performative one was obviously about live performances. What we did was actually the spect[raum] project which was carried out for one night on the Dexia Tower. One night of live audio-visuals. Concerts were taking place at the bottom of the tower and the audio visualisation was carried out live through the music company. #00:13:18.2#

What kinds of content did you display? Diagrams or abstract visuals. Moving images? Distortions? #00:13:30.9#

It has always been abstract. The resolution of the screen does not allow to carry out very sophisticated/detailed visualisations. I am not very much believing in that either. Abstraction is our language or design signature I guess. As we have been carrying out the curatorship for the tower, of course we were selecting artists which played along our aesthetical convictions. Still, there has been content played on the tower by the bank themselves which was more figurative. But it didn't come out very well. It is of course possible, but we never did it. #00:14:30.4#

Do you think this is a problem of resolution itself, or is it a problem of being boring displaying high resolution images in large façades? Is it more interesting to be low-res? #00:14:51.5#

It is a matter of preference. I think that an abstract visual language is somehow much more enabling people to give their own interpretation to what they are seeing. It is from my experience amazing to see, what for example people ranging from 4-years olds to 70-year olds were creating with the simple points, light, surfaces at their disposal in Touch. So I think an abstract visual language is enabling people on the one hand to do something with their own creativity. On the other hand it's not something which is interactive to have their own level of reading. Abstraction for me is a universal language. It is much more accessible than narrative works or figurative works would be. After all I don't use abstraction because I think it is something that will please most people. For me it is much more an aesthetical conviction. Though I heard once Joachim Sauter saying at a conference that he doesn't believe in anything else but an abstract representation - excuse me Joachim if I put your words wrong - something where at least you don't superimpose a second narration onto the one of the city. He knows to say it so much better than I do - maybe you should ask him. #00:16:58.8#

Ava Fatah was dividing space into urban space, information space and social interaction space and defining media architecture as playing roles in all three of them. Which effect/impact did the project have on the spatial context of brussels. Where would you place it? #00:17:49.8#

Urban space. I mean it is not only about interaction. So I would not put it in the interaction space. Of course it also was a form of information, but afterwards I think the level of urbanity was much more important. One of the aims we had was creating a new urban landmark. The aim was not necessarily to display information. The idea was really: this has to become a symbol for Brussels. #00:18:33.2#

And for the bank possibly... #00:18:36.2#

Well, I am sure that indirectly for them, it had a real publicity value, but of course you are not creating your art for this purpose. Of course everyone has his own focus why they do this or that. It is true that for the Bank, something like this is very important to profile themselves through art. They are the largest art collectors in Belgium. For them, art is a very important value. For us, the idea was not to create an image for the bank otherwise we would have put so much more money on it. We simply wanted to carry out our art work. #00:19:22.8#

You mentioned before, you've been the curators for the tower, so you included projects by other artists. Do you think that this form of curation of public media architecture is actually the best way to provide content. Or do you think it is possible to develop content that changes over time and stays engaging? Do you think curation is the way to do it? #00:20:29.3#

Hm. I think there are different answers possible. One of the reasons for us to invite other people was that we have done what we wanted to do on the Dexia tower. Of course if today we would again create a project for the tower, I think after a break of 4 years it is about time to get back and preserve this infrastructure as an infrastructure for art. But there we enter completely different

problematics: The Dexia Tower has been switched off since the credit crunch. Due to the financial crisis they got very afraid of the image they were sending out with keeping the lights of the tower on. At the moment the whole file is kind of blocked because there is simply nothing moving on the financial level of the bank. You could say in general that one of the reasons we wanted to open it up to other people was because we had shown somehow what we meant with making interactive, generative, and performative projects. I think for us it was kind of exemplary to do these three projects before inviting others. But apart from that, I think without sounding too cheesy about the role you play when you're able to manipulate the image of a city, I would say that it's nevertheless a responsibility to make sure that there is a wide scope of interesting art being shown. If you have a gallery, you also change the program of the gallery. That was really the idea to set up a database of artworks which would enable the bank to change the content of the tower whenever they felt it was appropriate. #00:23:15.8#

The next block of questions is basically about project data, like timeframes for the project, which you mentioned was a year roughly? #00:23:36.2#

Let's say for touch we had an incredibly short time to create it. The project opened on the 26th of December, and we started it really in October. It was really a bit of Rock'n'Roll. However this was actually a timeline we proposed ourselves. It was a difficult agenda and that was the way we were dealing with it. It stayed until January 15th. For half a year the bank then tried to put their own visuals on their infrastructure to see, experiment and test'n'tweak their infrastructure. The spect[raum] performative series we did the last weekend of September 2007. Who's afraid started in October 2007 and went until November 2008, exactly when the credit crunch hit in. #00:25:23.3#

Is there a way of dividing these timeframes up into phases, such as for planning, designing, execution? #00:25:39.7#

Absolutely. Normally, or in the ideal relation with a client, we first have a sketch phase, just carried out for a minimum amount of money which is enabling you to actually think about an idea and to formulate it. If the client likes it, then there is an in-depth study on the level of the artistic and technical proposal, so at that moment there is research into technical solutions in accordance to the artistic proposal, for the specific location, size and measurements and everything relevant within the actual planning of the project. This phase is taking one month minimum to carry out. If the client is accepting your technical, artistic and organisational choices, the production phase is launched. Depending on the scale of the project, it can take 3, 6, 2 months. That really depends. Of course all this is agreed beforehand between artist and client so you don't lose time during the actual carrying out in discussing whens and whats. The phases are paid separately. And before the actual production, we personally as a studio ask to be paid the entire amount of the production budget. And little things come afterwards. #00:28:16.5#

So are you working with external engineers for such studies? #00:28:21.3#

It depends. For largelargelarge-scale stuff yes. We are currently creating a 24 meter high light sculpture for Paris. And of course for this size, you need to work with engineers. You need foundation studies etc. #00:28:47.6#

The commissioner for the Tower projects was obviously the bank itself. Was there a kind of selection process taking place prior to being commissioned, such as a pitch, a competition, a request for proposals, an invited process? #00:29:09.7#

Let's say it was a closed selection procedure. But I know there are different people I think were consulted. #00:29:23.0#

What would you think were the stakeholders of the project? Maybe there were different stakeholders on the side of the commissioner? #00:29:38.9#

How would you rephrase "stakeholder"? #00:29:43.3#

Whoever has some sort of ability put influence on the project... #00:30:04.2#

Let's say if the public's reaction with the first project would not have been as good as it was, I am sure the story would have been completely different. Touch has been an incredible success. I've never seen people queuing for so long - they were standing in line for 45 minutes in the freezing cold to be able to manipulate the touch screen. I've never seen them queuing for any other of my art works ever since. It was a very good reaction from the visitors, as much as there was incredible press coverage. A website which out of nowhere had 20.000 unique visitors during the duration of the project. We had as an average around 80 people from all over the world simultaneously looking at the web-stream. There was a very good appreciation from all kinds of levels, so there was a good soil to further discuss the possibilities for this tower. If this would not have been the case, I don't know if there would have been any other artwork. Also it might be important to mention that during the bank's testing period of the façade they have been putting their logo super-large on their façade. However all lighting publicity is taxed in Belgium - I don't know if this is true elsewhere. So after a few months Dexia had to pay 800.000 Euros to the city. Somehow a convincing amount to realise that a large logo might not be preferable for the façade. So this of course has eliminated a certain branding option. So what are the options left at the moment? Art works, or default animations? To be honest from time to time there are now default animations on there. #00:33:26.4#

Those taxes are a good way to get rid of all the corporate logos in the city... #00:33:29.8#

Another option is what they did about 5 years ago in Sao Paolo, where the mayor had decided to ban all the commercials/publicity in the city. If you visit the city it is amazing not to see any publicity... #00:33:55.0#

I think I've seen pictures of it. It looked a bit deserted, all these empty billboards #00:34:02.9#

Completely. It's a city which is having a lot of brutalism architecture. Suddenly the concrete becomes even heavier... it is just the beauty and the beast. A very rough city... #00:34:41.0#

Coming back to the stakeholder question. Did you somehow invite people into the actual planning process? External people, or someone from the commissioner's side? Were they taking part in the process? #00:35:08.3#

Well, the thing is that we are kind of convinced of our working methods knowing that this is the way efficient enough for us to work within the timeline accepted by the client. So the timeline/plan is very detailed in clearly stating the obligations. If the timeline is not agreed, then there is no project. But this does not mean of course that there is no exchange between us and the client. Particularly in the case with Dexia, there has been a lot of exchange to be able to establish what we have been establishing. What we did was really the result of a teamwork. The bank has been really supportive in anything whatsoever. This is certainly exceptional and I can imagine that some clients are more difficult to work with. There has been an incredible amount of confidence which has been built up during the exchange. With other clients, this might be a completely different story. #00:38:28.9#

#00:38:28.6#

In terms of budgeting, did you have a comission for the whole project, or did you divide it into several comissions such as software development, interaction concepts, content development. #00:38:44.9#

No. It was a very short timing, so we had a global budget. To transport it to other context. How we actually work is based on a global budget, so it is clear what it will cost globally. The different interim phases are part of the global budget and communicated as such. #00:39:59.4#

How did you set up the project team in terms of size, background? #00:40:07.3#

There was nobody else than us and our assistants involved. So we are a team of three, me, Manuel and Jerome. Then, depending on the scale of the project there are other people jumping in. So for Touch, we had help of four people giving us assistance during these months. #00:40:36.7#

What kind of background did you all have? #00:40:46.6#

Architecture actually. Both me and Manuel have finished an Architectural Master, Jerome has a background in Architecture as well as Sculpture/Monumental Arts. So architecture is shared by the different members. Our assistants have usually handcraft-background or programming background. I mean interaction design. I actually don't know what it is. In the past 5 years there are actually formations which are given to people to make these kind of art forms. For us, everything is self-taught. It is difficult to give people a certain profile in our case. OK, we conceptualise a project, we build it, we do the electronics, we do the programming. We talk about qualifications rather than certain aspects of the work. For us, interaction design is inherently part of the design of the project. It is not a specific human skills profile. For us it is being able to be able to do crafts, or programming, or electronics... #00:42:57.2#

What role do spatial usage, location, adaptability or playfulness of the project play in your work generally #00:43:17.8#

Playfulness already zero. Unless you would define interaction to be something playful. Adaptability is also no condition either. Although it depends, if you talk about installations that travel (our pieces are travelling quite a lot), it is quite an argument to be able to build them up elsewhere. #00:44:07.0#

What kinds of sources of inspiration / tools of inspiration do you use in the conceptional phase. Especially for the Dexia project. #00:44:21.9#

It is really coming from quite a wide range of aspects. For the "Whos afraid of RGB" series of course the "Cybernetic Tower" by Nicholas Schöffer is quite a reference. I guess the interdependence of sound, image, although kind of a classic, is of course referenced to the "Poeme Electronique" by Le Corbusier and Iannis Xenakis. Very important. Of course the series is also referential to Barnett Newman. It really depends from project to project. For "Touch" it also was Mandarin, Broadway Boogie woogie. So I would say in attraction architecture or art historical references. There are references also in terms of the sites where the installation takes place. Especially when your pieces are traveling to other locations.

How do you include these references to the specific locations of your installations? #00:46:06.9#

If I would be able to choose where we exhibit, the question would of course be so much easier. But of course certain invitations are allowing you to dive more or less into the historic aspects of a certain context. For frameworks for example the work has been created for the Tschumi Pavillon in Groningen. There of course the entirety of the gallery which is a glass box which is shifted around two of its axis, was completely at the base of the conception of art work we have conceived for it. There the reference becomes a condition. #00:47:12.6#

Are there any specific methods, or devices, or modes of work you are applying within your creative process. It might be something that is more specific than generative, performative, reactive systems. Or is that something changing individually? #00:47:59.3#

For us the context is defining a lot for a project, so there is whatsoever always something within the context which is defining why you choose on the one hand one of those projects which has been already so long on the short list of projects you want to do. Or, creating a new project. So the special context is very important. Then there is of course brainstorming, which is kind of an exchange of the first things popping into our mind. This is based on a former thematic level being indeed generative, performative, reactive etc.. Then there is a phase of referencing. For instance if you say it will be something with light and something hanging from a ceiling, then there are certain things popping to your mind, which can be a reference to stick to or to absolutely avoid. There is a certain amount of referencing in that phase. Then this is evaluated again within the context and all the conditions which might be influencing your final choices. Once this is discussed/evaluated, you have an idea which is going into a study and prototyping phase, after prototyping the testing and tweaking phase, the real production, after the real production the installation in situ, then again testing and tweaking, and then, somewhere in the course of all these different steps, there is a name popping up, and by the time the project is finished, it has its name. #00:50:36.5#

How do you bring about decisions in the creative process? Especially in the beginning, when there are a lot of possibilities, vague ideas, how do you come to decisions? #00:51:04.9#

It really depends on which level. Ideally speaking you are taking decisions which are economically, conceptually as much as artistically and technically feasible, but in a lot of cases, I can tell you it is quite emotional, too. #00:51:37.1#

The Dexia series is interesting because you could get an idea that you would be able to incorporate user feedback (people queuing for the Touch installation) into later projects. Do you include feedback from the public or spectators? #00:52:19.7#

No, but I must admit that for example the framework project is really a direct result of the Dexia tower series. It has confronted us with a series of things. So one of our questions was: Wouldn't it be nice to have something which is pretty both during the night as well as during the day. Of course the Dexia is very impressive during the night, but during the day it is really nothing more than a corporate building. There is nothing specifically interesting about its architecture. That's why for frameworks we incorporated this night-day logic where actually during the day you have the black white contrast which enables certain patterns, and the night mode, where we lighten up the installation. I don't think that we would have made this choice if we hadn't done the Dexia tower. Another aspect you could derive from the sculpture but you could as well consider it as a prototype for an architectural integration. Probably we wouldn't have touched kinetics without having worked with the restrictions of light. So artistically it made as grow, as it is a sculpture incorporating generative, performative, interactive logic. It's really a framework. Nothing more than that. And nothing less either. I don't think that we have been taking any conclusions in accordance to usability or whatever because the project has met our expectations and in so far it is just a confirmation that we made the correct design choices for our artistic maturity. It enabled us to grow. #00:55:45.9#

So would you say the more interesting Media Architecture is actually Kinetic Architecture? #00:55:55.0#

I would not say that. Actually not at all. I would distinguish different levels in a project. For me in the first place there are aspects of content and the display system. The display system might be kinetic or purely light. If you see for example the Illuma building from Realities:United. The units, they use are really beautiful and the building itself is really the best example of contemporary architecture in Singapore. It is a beauty both during the day or during the night. But on the level of content there could have been a different proposal. Tim and Jan can explain much better the details about it. In this example however, there is no kinetic aspect, though still it is a very beautiful project and a very good illustration to show content, as well as the interface are very important. #00:57:41.7#

Venturi and Scott Brown described iconography as a major quality of architecture (architecture as communication). What do you think audiences/users should be able to read in Media Architecture? Should they be able to read something? #00:58:12.6#

Obviously why we curated the "Who's afraid of RGB" series is to enable the users to extract a kind of global information from this. The first project was enabling you to read time. The second project was to enable people to read the next day's weather in Brussels. The later projects that haven't been installed (credit crunch) would have carried on this global aspect. For us it was obviously important to cybernetically read one or another environmental or global data/information. If we would do another art work today on the Dexia tower, there is still one project we would like to do. It would not necessarily have something to do with this cybernetic idea, but if we would do again a series I am still convinced it would be the best choice for something which is a permanent illumination. For everything performative or interactive, it is almost a subjective choice, I really believe both in interactivity as reactivity in this context. For any other other Media Architecture I would really apply the same logic to work generatively, interactively, and performatively, to really carry out these three axis. #01:01:04.9#

-- Interview had to be interrupted at this stage --

7.4.3 TROIKA – Sebastien Noel, Founder

“Troika is a collaborative contemporary art practice formed by Eva Rucki (b. 1976, Germany), Conny Freyer (b. 1976, Germany) and Sebastien Noel (b. 1977, France) in 2003. With a particular interest in perception and spatial experience, their collective works challenge our prescriptions of knowledge, control, and what it means to be human in an age of technology. Troika’s work is part of the permanent collections of the Victoria & Albert Museum London, The Art Institute of Chicago, MoMA New York and the Israel Museum. In 2010, Troika was commissioned by the Foreign and Commonwealth Office to produce three site-specific installations for the UK Pavilion, designed by Heatherwick Studio, at the Shanghai Expo. In 2014 Troika was selected to present their work ‘Dark Matter’ at Unlimited, Art Basel.”

http://troika.uk.com/wp-content/uploads/2016/07/20160727_Troika_CV.pdf

Transcript of Skype Interview – TROIKA, Sebastien Noel, Founder

21st March 2011, 16:00 – 17:00

Don't worry. It is just a short warmup, Sebastian. So, Troika is essentially about you three isn't it?

That's right, okay. I am Sebastian, I founded the company together with Connie Fryer and Eva Rucki back in 2003. I think we grew into that kind of world of bigger installations for architectural contexts. But I am not sure to link back to your research subject which is essentially about animated façades because that is something we try constantly to avoid at all costs. I mean regarding this topic realities united and Jason Bruges or labAU is much more down this stream. That is what they do. Right. They do façades. They do work for screens on an architectural scale.

What I find quite funny and strange that it became a kind of de-facto response to integrating media and technology into architecture. De facto you can plaster thousands of LEDs on the façade and you have very little reflection about the context what it does mean. Even if it means nothing. People are very good at developing screens but it is very very difficult to fill them with content afterwards.

But more than that, I can't tell you. What we are doing is not exactly that but related to your topic I guess. Mainly from the technology approach used. We have a completely different approach, an artistic approach.

You guys are seeing yourselves as interactive artists then?

Yeah, much closer than applying architectural or functional responses to technology or to the need of integrating it. You know, if I go through your email. Yes, we work on a sculptural level. Yes we do take context very much into consideration. But that is much more in the way of a public art intervention. If you know what I mean. We have an affinity to the work Jason is doing. I know him very well and to a certain extent I kind of understand what he is doing and the motivation behind it. The work is just very very different.

Talking about installations, are you seeing these installations as temporary interventions into public/semi-public space or is it something that you built for a permanent level? Are you basically doing what you like or how do you approach a project?

Well, I think the context is very interesting. For us it's a meaningful thing. Unless something has been specially commissioned for a space, taking into account the context is very interesting. You can see that in »could« or »all the time in the world« which are kind of responses to the airport environment. Even more to the semantics of the space. What does it mean to go into the lounge from an area that is very busy. There are allegories of crossing a cloud layer which make you enter a very calm space, going very well with the concept of the lounges themselves. But, I don't know exactly what you want to talk about, Klaus.

Oh, You are actually helping me a lot already ...

What is your problem. What is the area of research?

The direction I am coming from is basically from a communication design perspective. I am looking at the subject from a perspective of being designed for a certain purpose. Even if it is more of an artistic installation. Talking about »All the time in the world« even if it is as you mentioned more of an art installation, there is some sort of situated purpose there. What's happening in light

installations or architectural lighting is from what I am seeing is that the use of technology becomes inflationary. Technology gets applied, but it is not necessarily discussed how this technology becomes part of the space on a longer term level, for one or two years maybe without changing.

When you are working on a piece of installation, are you taking into account how the installation is perceived, how it is working in longer terms?

Yeah of course we do. If you take the case of »Cloud« or »All the time in the world« they are pieces where you consider the whole thing. What is the space, who is the commissioner, what is it they wanted to create, the flow of people within the architecture. For example with »Cloud« the reason why it is completely three-dimensional is points of entry, because you can see it from every kind of vantage point.

These are all parameters that go into the work. The situation that you are describing is to my mind of a completely other kind. I think it mostly comes down to convenience. Plastering "onethousandbillionzillion" LEDs despite the cost is something that is very easy to make, you can go to an assembler they have turnkey solutions, you go to BARCO, you know, why do you want it. We will see in 20 years time. I don't think the craze for completely clad architectural buildings will still be there at the time.

So you think there is some sort of craze of LED cladding at the moment?

Yes of course. The people that you have mentioned like Jason Bruges, LabAU, Realities:United, they are still people pushing this kind of willingness from an architect or the blockbuster to something fancy or evolving and they do it very well. Realities:United have been in our book, I really appreciate what they are doing. For example what they did with the Graz building: It's neon lights, neon rings, very difficult to make but a very strong appearance. When it comes to life it is very beautiful. There is a relationship with the content happening inside as a performance place.

What you might cringe a bit more about is places like Times Square, or Shanghai, or Hong Kong, you know, those places there is not the level of understanding and probably not the money dedicated to getting a specially commissioned piece. And then it becomes convenience, like applying a cladding solution. I don't see much of a difference between that. Putting pretty colours on "alucobond" cladding.

Do you think that there is a potential of these displays to be more than just screens. Do you think that for instance interaction with these façades needs to play a larger role to be more involving, communicating?

Wow, that's a lot of keywords in one sentence. Public space, communication, interaction, involving ...
Imagine you are in front of a building, what would you want to tell it?

I mean it does already talk to you. There are messages. You mentioned Times Square, Piccadilly Circus or Shibuya in Tokyo. Not now at the moment, because they are saving energy, but these places are communicating since a 100 years because there has been advertising put on buildings. But it's always one-directional. What you can do now, as has been done in many cases, is to use that technology as a part of a feedback loop. Many of these applications in public space are feedback systems and the screen is just a part of it.

Give me one good example. One that you really like.

Well there is this façade, it's more an architectural projection, called »Climate On The Wall«, by a Danish Research Institute (CAVI, Aarhus). It is a large projection, reacting to passers-by. Similar to magnetic typography on the fridge, it is doing the same thing within an interactive projection. Allowing passers-by to leave typographic messages on the wall. In a playful manner. Related to climate change as a central motive. People are putting words and meaning together on that wall just through their movements. The video is showing that quite nicely.

Ok, I'll google it. There you are talking about a very specific content. Making a case for or against media façades is actually a bit weird. Of course you find very nice projects, and there are meaningful examples. The speech bubbles at climate on the wall is lovely. But do you really think it is a functioning thing, do you think it will raise peoples awareness of the climate change. Or do you think it is something that will stop them because of the novelty of the experience. There is something that is responding to them, that they can complete or send an SMS to. In what sense is this different from a graffiti wall, or a comment wall?

Well, you don't need a spray can to interact with it.

And apart from the writing medium?

And obviously it is flexible.

A spraycan too!

True, then there are legal issues of course. You can apply projections on many backgrounds without interfering with property law etc. I am not saying that graffiti is not a viable communication form. But essentially, that is not the area I am interested in. I am interested in ways of using this technology as a communication medium in a more sensible way.

I am sure you have the Chaos Computer Club stuff in your research. That was lovely too. I think there is nothing wrong with the technology. It is just like think a need for application. I think it boils down to that. You surely find some relevant example that goes beyond advertising, that is involving, that is giving something back, that is playful. There is no problem with that. But I think that without context or relevance there is not much difference between that and again a cladding solution. The same kind of ease, for architects it is easily available they can get it, they render their building fancy with that. There is of course the question if we can do that better, but I think that is a different story.

How do you find out if your projects have more relevance to people. How do you evaluate your own work?

Again, I don't think we have ever done an in detail, in-depth evaluation. But this has also to do with what we are doing. It does not have a function to fulfil, there is no quantitative criteria except maybe looking at the number of publications you get or how the reactions on social media come in.

Is there a qualitative evaluation?

Well, that is mainly the reaction of people when they see it. What kind of feelings it creates, if it is pleasing to them or not pleasing. And it is also for yourself as well. I mean, in what we are doing there is no point in dealing with an ego-centric research. Not like an artist, it has also to do deal with what we think about it.

But of course, if you find relevance for the public it is a fantastic thing. Again, I find it difficult to say. Our early pieces we made – probably you’ve seen them on our website – the SMS talking machine. It is very easy to see if people like it, because you have data-logging, of how many people have sent sms-messages to it. Or we did a project for the BBC. Where we did a kind of memory wall where you can send SMS about your concert experience. At the end of the day you had a nice full wall of experiences of people. It was really interactive, because it was not only about saying »I had a good time there«, but you also could read it and see » ah, it was fantastic« and respond. You had this kind of double-layer of interaction. Which again you can monitor. With something like »All the time in the world« it is very difficult to monitor an impact, you know. What is the impact? Some people pass in front of it and won’t even notice it. They won’t give a shit. Other people they would look at it and possibly find it very poetic. How do you measure poetic impact? Do you have a poetic impact quantificator?

Haha, a qualifier maybe ... So talking about »All the time in the world«. What exactly was the intention behind the project? Obviously, you had an intention, didn’t you?

Essentially, British Airways Commission for Terminal 5, they asked us to make a kind of an international clock for that wall. Some kind of world clock with London, New York etc. We just wanted to create a tongue-in-cheek answer. Because that is a very reductive approach to the world. We wanted to see what happens if you are starting to display bankers time-locations. For instance the Great Barrier Reef.

Usually when you see a clock like that, you never look at it, it is just a symbol that says loud and clear: »We are international«. It reminds you of 1920s corporate offices. It is actually not used in traders rooms anymore. It is much more of a symbol for globalisation. So we were just thinking, you know, can we present an alternative vision of what is globality. That is mainly it.

So do you think it is actually changing the specific location or notion of the place?

No. The only thing it might do is maybe reminding you of something else. Reminding you that going to Japan is not only like going to Tokyo.

So it is almost like a typographic wallpaper?

Yeah. Maybe. It depends on how good is the wallpaper. I think there is an essential distinction to make between the medium and the message. And in this case I really fight against McLuhan and his terrible ”constatation”. I don’t think the medium is the message. Or at least we are trying to transcend that kind of notion. The medium is the medium and the message is the message to me.

You said you have been given a brief ahead of the work. Is a clear brief a usual situation for your projects?

Not at all. In the case of BA we could have chosen perfectly well to do something else. Actually, the clock was not part of the brief, but came up during one of the first client meetings. They said »You can do whatever you want, for instance you could do a world clock«. And this just ticked with what we were thinking and we said: »Yeah, let’s do a world clock, that is quite cool.« No, usually people don’t come with a brief. That’s again what I was saying. Being in the room of the people you’ve contacted, we are kind of the odd ball, because we operate much more like artists on commissions, rather than giving an architectural service. Even in the case of Jason, he still tries to push it and make it extra special. But he is many times contacted to illuminate buildings. Which we are not. People come to us with no agenda. They want to commission a piece by Troika. It is a different context.

That is interesting because when you google Troika, I think you need to google Troika Design Studio.

Yeah. That is where we come from.

So you consider yourself more or less drifting into the art context or do you make that distinction at all?

No we don’t make that distinction, because I don’t think it is relevant. To me, design, art is just like a tool, it is a methodology. But, yes, historically, we come from design. My masters degree is in design, not in fine art.

So when you are approached by a commissioner (not a client) to do a piece, is there some sort of conceptual approach you are usually applying? Or is there something you try to avoid?

No. You can see that in our work. We are creating a treatment. But for large installations, for us the context is always very important to us. Even if you look at public art most of the time the attention to the context is very small.

Is context meaning historical context or spatial context?

All those things: What is the story of the place? What is the space itself? How do people move in that space? What does the space mean? Yes, it is very context-specific, but I think you can get that in all the different things. And maybe that is a reaction to how public art goes astray. It is forgetting about this anker into the context and become replicable anywhere. You can take the same thing and place it somewhere else. It doesn’t build of notion of locality or helping to fulfil the main brief of a big art commissioner which is essentially creating a landmark, a point in the city.

That is interesting. I’ve been recently talking to media artists working in a similar field as you guys and they are purposely creating pieces that are travelling to be shown on festivals and sites around the globe. That is apparently quite different to how you work. So you are trying to include the spatial situation into your project development.

Yes, but it is also because most of our pieces are commissioned on a permanent basis. We are not moving them around.

What has happened to the pieces you have done for the World EXPO in Shanghai?

They are destroyed. Yep. That's what happens with the EXPO. But it's beyond us.

When you guys work on a project, I suppose there are more people than you three involved in the team. Do you have some sort of net-work of externals, or do you have freelancers coming in?

Both. We have people that we employ. We have people working as freelancers, there are people only coming in for fabrication or we have external fabricators if the piece is too big. We have loads of different types of collaborators. Like craftsmen, scientists, people who grow moss, do electronics, because I guess our work is very varied, so we cannot have all the competences. And it's nice and something I enjoy.

Is the project actually evolving from this sort of multidisciplinary situation? Do you employ those specialists working on parts of a particular idea. Or is it a situation of exchange. Are externals for instance influencing your initial idea to become something else and is there some sort of process?

It depends again. It really depends on what piece you are talking about. But for example if someone like an electronic engineer is coming back to you and says: »Look, it is not possible to do it that way, can we do it another way. That is the nature of working in a team, right. Even though I have to say depending on the piece there are things that are very clear from the beginning. The multidisciplinary aspect you are describing is mainly happening between Eva, Conny and me.

So the 3 of you, are you guys generalists? are the type of guy doing the technology or are you sharing competences and how?

It depends what it is. Regarding the concept/idea all three of us are working on it. After that, it is depending on who is suited best to develop it. But it is a small studio, so you are constantly looking over the shoulder of people. There is not a department of engineering you need 30 minutes to reach.

So in terms of the people involved in the project are there any other stakeholders involved apart from the design/development entity (designers, developers, engineers, scientists) and the commissioners? For instance for the BA project?

Yes you have loads of different entities, depending on the project structure. In the case of »Cloud« for example you have curators that are in-between the client, for instance British Airways, and then you have Project Managers, in this case it was Mace Ltd. So, it can be quite complex because you have loads of people onboard. You also have the Architects. On the Pavillion for example, probably the most complicated project structure we had, you had Foreign Office Architects. You also had project managers from Mace Ltd. We didn't have a curator, but we had a content advisory group. You also had Architects, Thomas Heatherwick, you had people that fabricate. It can be very challenging. I think, that's also about what I have been talking about before, regarding convenience. When you have a communication chain that is that big, when you have a project of high value, collaborating with a young, arty practice, whether it is from communication design or its is like us or it's LabAU or Realities:United present structural challenges. In a way you are not accustomed to corporate culture to the same extent they are. And you cannot, because of the size you are operating at, implement procedures that they normally would require essentially in order to avoid a perceived risk. And that I think, is where you start to approach your problem of why media façades are how they are at the moment, I would much more address the structural hierarchical pyramid that makes those project commissioners work, rather than the design thing. Because the designed side, you can see, but it is not about the technology. You can see fantastic projects that have been made with LED walls. It is not a problem of the medium. It is not a problem of relevance of the message. I think the problem is convenience.

So do you think it is more a communication problem?

No, I think it is structural.

So the problem for you lies in the structure of large corporations, with hierarchies, departments, project plans, managers ...

Yes, they've got risk assessment, safety systems, lists of what you cannot use, ISO1200100, Reg 3. of safety regulations. And for them to pick up an LED cube from BARKO that is CE certified and to stick it there to see afterwards what happens with the content, which is the least of their problems because it is usually commissioned to another set of people after the building enters operation ... [making gesture of shaking off dirty hands ...]

Hands off ... job done.

Yep. Those people - and I am not pointing fingers or blaming them, it's the structure being like that - what is their interest in making a good piece of art or a less good piece of art? If you manage to solve that problem, you can come back to us, hehe.

Coming from interaction design and digital product design, I think that the problem of hierarchy, regulations, iso standards you mention is a quite common problem also in other areas. I guess it is not necessarily specific to Media Architecture or permanent media art?

Well, to me it is particularly relevant as soon as it becomes »architecture something«. And that's just because of scale. I am sure one can imagine Media Architectural design at a mind-blowing scale. But also, I guess it will blow the minds of the contractor, that is one to certify against IT65 rating and this and that ... Also, the cost and the DA is going to take on. Or even if it's ok taking on, what happens if you cannot deliver. You are small, it has never been done before ...

So, how are you dealing with this situation?

By trying to understand better what are the motivations of people. Trying to understand, how you can make a case. And I haven't cracked it. If I knew what to answer to that one, that would be great. I think to understand a bit more, what they care about and what is their culture, in order to enable the level of innovation that you want to give to the project is very interesting. This is a big learning curve as a designer. Because you do not know them that well. You don't know why it is relevant for them to have this or that certification, because you say, it's not a problem, it's save, it's ok, you tested it, the structural engineer says it's fine. So, what could be the problem. And you realise the problem lies in the meanders of the corporation. And you start to unfold, is there

another company giving you certification? And of course, why would they give their liability like that. This is very intricate if you start to uncover more and more of those things. I think the best commission you can have is directly from the CEO. From very high ranking people. Because they can knock off an operation, they can make a decision. They can say: »Look, this rule, I know it's by the book, but seriously, this is ridiculous, so we are gonna facilitate that.« They have the executive power to do so. At the lower rankings, why would somebody decently-minded take the risk for something that most of the time he doesn't understand or is only mildly interested in. Often, we come as a sort of odd-ball on the plate. You go to any kind of certification agency and say: »Hey, you want to sign off that LED-Tile?« »OK, which LED, what power, how is it sealed? Tack, signed off.« On the other hand: »Do you want to sign off that weird mechanism that makes the thing moving like that?« »Hold on a second, how does it work? Which pin is that? ...« and so on. It is a headache.

Do you feel that the way you are working as designers/artists enables you to by-pass these hierarchies to some extent. For instance through the publications you did, the public level of your work and its visibility. Is that helping you in a way.

Of course it does. Yes. It's on your resumé. You've done a few big projects and they went well, and people are happy. So maybe, we are not completely insane. Yes, it does. And I am sure if you talk to Jason, he is going to tell you the same. The first time you present a bonkers idea, people are very reluctant. But if you already have a bonkers idea in your portfolio that actually was made and it works, of course. People are people.

Did you find any particular ways of conveying/communicating your ideas to specific stakeholders and particular levels and decision makers? Is it a question of how you present your work to get it over the next level?

Of course if you manage to engage them personally, it's better. But also, there is a limitation to it. If you did a very nice presentation and everyone said »Wow, fantastic, let's do it« of course it is much better. But it doesn't change that rule B has to go into compartment D and vice versa. I don't know precisely how to do that. That is something the whole profession is learning. In a way, again, your problematic and the question as to why those displays are so devoid of content is not so much due to the impossibility of the technology to present any meaningful content. It is like approaching a problem from a design angle that is resulting from design.

Yes of course. What I am suggesting is that design can help communicate across these different levels of stakeholders and hierarchies. In a way, the question is how design prototypes and models cannot just be used as a method for proof of concept, but as a language in itself to communicate ideas and get people on board.

Yes it is a language. To a certain extent. To a certain extent, you are perfectly right.

Are you working with models, mock-up situations?

Absolutely. With the »Cloud« we made one at 1:15 scale. A scale 1:1 but 1/15 of the section for BA to show them how it would work. Constantly we make prototyping. We make mock-ups, we make animations, we do renderings. They are all fantastic tools, they help a lot to convince people that you can do what you are saying. They help to understand where you want to go with the project. To convey a feeling, they are very helpful. But what I am suggesting is that there are other types of problems that you will encounter where design is not the result of design. It is the result of business management, or the kind of system that you need to deal with.

This is really interesting because it is touching a lot of the questions around design as language and the use of external design studios as a strategy of internals to by-pass hierarchy structures and get people onboard and bring about quicker decisions.

Yeah, this is the way it works for them every day. You can't blame them for that. But anyway.

Ok, just two last questions to finish it up. Two quick ones. There is a lot of talk about experience design in the design field. User experiences. Spatial experiences ... etc. Would you consider yourself as an experience designer? Or designing for experiences?

I don't understand why people always make dichotomies all the time. You design the whole thing. Design is an inclusive approach right. Think of someone that doesn't design the experience. That would really be crap. Right? An object, but the designer forgot about how it is going to be handled and used. Or the design of a shop but they forgot about where it is gonna go. How people would come to it, the lighting around, etc.

OK, and you mentioned the second one about design as an inclusive process. There is a lot of talk as well about co-creation in design and including diverse ranges of people, lay-persons etc. into the design process. Is that something that you consider relevant to your work or is that irrelevant given the fact that you work as artist-designers?

To be honest, we don't really approach that. We already have so much co-design within Troika advising each other, I don't think we would come to an end soon ... But seriously, I think it is always very valid. We haven't had the opportunity to do it, but it would be quite interesting to organise some kind of consultation to see what people imagine for a space. But then, that is also something you do naturally, right. If you go to a space or site-visit you always go around asking people about the place and their habits. »Oh, you are selling hot-dogs. Oh, from Canada ok!« Well, you do it naturally, that is how it goes. I think it is very relevant if you try to gain experience from particular people that are going to use your thing.

But then, I think with Co-design, it is also a question of branding. People like to brand stuff. It is also a way for agencies to differentiate themselves within the market. Experience design. Interaction Design. Co-Design. I am sorry. But I think co-design is like a standard practice that has always been dealt with. Yeah. If you ask me to design a drill, the first thing I am gonna do is go and see builders to ask them: »How do you use the drill? Can I see?« »Would that help?« »A well, that's not what I need, what I need is a spirit level in the back!« You know, I think it is something we've always done. The same goes with »experience design«. It is like the mood of the 90s. Let's break down everything bit by bit. So we have a competitive advantage.

But I guess I am not necessarily the right person to ask. You should ask people who work in these fields.

I know a few people working in these fields and you always get the standard answers. Co-design methods are often used as a sort of assurance for designers and their decisions. But in fields like communication design it is not that common to include stakeholders in the process. But then, just by observing focus groups, there is still the question if it gives you the full picture or if it is just another individual interpretation.

Of course, but do you need it?

Don't you need it obviously?

No, not necessarily. I think, you don't need to know the full picture. For instance look at the story of the Walkman. Or the remote control, even better. Any focus group would have rejected that. No consultation would have made it appear. Same thing. Design is not mathematics.

Ok, Sebastian! That's a good final quote! Thanks a lot Sebastian for your interview.

[OFF]

I was choosing the studios for interviews not based on their work within the field, but their approach to develop relevancy, so ...

You know, Klaus, what I would do? I would interview some of those companies in China doing these Copy-Paste media façades. That would be fascinating! Or manufacturers that install them. You could ask them why they think people would buy that and what about the content, do they care. Get yourself a quotation for 700sqm of LED panels. If they are able to give you a quotation within 15 minutes, you have a great example of convenience in the field, right. Think about all the nasty questions. Is it gonna rain? Is it fireproof? Is it energy certified/marked? ...

OK Sebastian, good point. I will let you know what and how quick they answered. Thank you very much again!

Bye!

[/ OFF]

7.4.4 3DELUXE – Dieter Brell, Founder

“With a 30-strong team 3deluxe practices holistic design across all media and disciplines. Founded in 1992, the team is active in the fascinating world that straddles architecture and design, art and Pop culture, and, first and foremost: at the interface between the analog and digital world. 3deluxe injects charisma into organizations, spaces and objects. It develops an expressive and consistent image for them that cuts across all dimensions of sensory experience – and fascinates visually, grabs people emotionally, and acts as an enduring source of inspiration. 3deluxe unites professionals from five different areas, who bring their expertise to bear in the fields of architecture & interior design, communications design and brand building, not to mention film & interactive design. The elaborate projects by 3deluxe have met with international acclaim and received the most prestigious accolades in the creative industry.“

<http://www.3deluxe.de>

Transscript of Interview & Studio Visit – 3DELUXE, Dieter Brell, Founder

8th May 2010, 15:00 – 16:00

Wir könnten direkt mit einem Zitat von dir von der See Conference einsteigen. Und zwar hast du dort gesagt: "Wir gestalten die Dimension Zeit, und nicht nur die Räume". Spiegelt das die Arbeitsweise des Studios im Bereich Architektur/Interior Design wieder?
#00:02:11.8#

Das fusst ja eigentlich auf unserer Erfahrung mitte der 90er Jahre. Die klassische Innenarchitektur war für uns damals irgendwann ausgereizt. Uns interessiert Veränderung, Erneuerung. Was ist modern. Was ist nicht modern. In der klassischen Innenarchitektur ging es immer wieder um Farben, Formen. Das war für uns irgendwann ausgereizt. Der mediale Aspekt, über neue Medien das Thema Raum zu erweitern und eine neue Dimension in den Raum zu bringen, war für uns ein neuer Aspekt. Wir sind keine Technikfetischisten. Uns geht es nicht darum, Technologie in den Raum zu bringen. Wir möchten nur fragen, was die zeitgemäße Erweiterung des klassischen Raumes sein könnte. Über die Erkenntnis, dass wir mit neuen Medien arbeiten können, ob Licht, Sound, Inhalte sind, die wir in irgendeiner Form in den Raum geben können, die Atmosphäre sind, daraus ergibt sich für uns erst diese Achse Zeit. Das gab es früher nicht. Ich hatte früher einen Raum, der sich höchstens über das Tageslicht moduliert hat. Ansonsten gar nicht. #00:03:40.8#

Das können wir eben heute anders machen. Zeit hat plötzlich eine neue Dimension, eine phantastische Erweiterung in das Thema eingebracht. Über das Thema Zeit bekommt der Rezipient, der Zeit/Veränderung empfinden kann, eine neue Bedeutung. Der Mensch mit seinen Sinnesorganen, der von uns letztendlich bedient wird mit Reizen. #00:04:19.0#

Uns interessiert eigentlich nicht so sehr der Raum, sondern wie der Mensch unseren Raum aufnimmt. Wir gestalten nicht nur die Achse Zeit, sondern wir gestalten die Zeit des Menschen, der in unserem Raum ist. Man hat so als Gestalter eine andere Perspektive. In dem Moment sind mir die einzelnen Bestandteile des Raumes nicht mehr so wichtig, sondern für mich zählt die Summe der Dinge, die letztendlich die Atmosphäre ausmachen. Daraus ergibt sich auch, dass für uns im Idealfall jeder Mensch diesen Raum anders wahrnimmt. Das ist auch sehr subjektiv. Solche Aspekte bedeuten für uns eben eine Erweiterung, als Gestalter anders mit Räumen umgehen zu können. #00:05:16.6#

Ist das eine neue Sache im Bereich Architektur, den Nutzer stärker in den Fokus zu legen – dass man sozusagen Experience Design betreibt? #00:05:42.3#

Das ist bestimmt nichts neues. Sei es zum Beispiel im Barock. Wenn ich mir solche Räume ansehe, wollten diese immer begeistern und die Menschen einfangen. Aber es gibt natürlich immer wieder Phasen in der Gestaltung, wo sich so etwas verliert und nicht mehr im Fokus liegt. Man hat natürlich als Ziel, wenn man Räume oder Architektur gestaltet, dass mir wichtig war, wie die Menschen diese aufnehmen, welche Bedeutung sie für sie haben. Aber es gibt natürlich immer wieder Phasen im Bereich Architektur/Innenarchitektur/Design, wo der Fokus sich immer wieder verschiebt. So kommt man auch u.U. auf Dinge, die vielleicht 30 Jahre vorher schon mal da waren. In den 90ern war das für uns ein neuer Aspekt, dass wir den Raum eben mehr als Atmosphäre begreifen, als als statisches Gebilde. #00:06:35.5#

Ist das etwas, was sich im konkreten Projekt der Zeilgalerie widerspiegelt, etwa in Interior Design Konzepten? #00:06:45.3#

Die Zeilgalerie ist für uns eigentlich kein typisches Projekt, weil das Gebäude schon vorhanden ist, mit einer eigenen Geschichte, und weil wir im Prinzip eine Fassade aufsetzen und einen Innenraum machen, der sehr viele Abhängigkeiten mit sich bringt, die wir natürlich bei einem neuen Gebäude anders konzipiert hätten. Von daher ist dieses Projekt nicht so sehr repräsentativ für unsere Arbeitsweise. Was natürlich interessant ist, ist die Tatsache, dass wir hier eine Möglichkeit haben, eine mediale Fassade in den öffentlich Raum zu bringen, nicht nur in einen Club oder eine Ausstellung, wo das normaler ist. Der Öffentliche Raum wird sonst in Deutschland sehr restriktiv behandelt – bei diesem Projekt gab es allerdings den Hintergrund, dass vor 20 Jahren schon einmal eine mediale Fassade am Gebäude genehmigt wurde, die übrigens für die damalige Zeit extrem innovativ war. Interessanterweise bestärkt diese Tatsache unsere eigenen Zweifel an der Innovationskraft von medialen Fassaden heute. Wir haben das Gefühl, dass dieses Thema diese Kraft, die es vor 10 Jahren mal hatte, heute nicht mehr hat. Da muss man natürlich untersuchen, woran das liegt und wohin es jetzt geht? Wir haben allgemein das Problem, dass das Thema Neue Medien und der Einsatz von Computertechnologien in Räumen und interaktive Räume heute normal erscheinen. Dass das Mainstream ist. Jedes vernünftige Handy bietet mir heute Möglichkeiten, die mich heute nicht mehr überraschen, wenn ein Raum plötzlich solche Möglichkeiten auch bietet. Das erwartet man heute fast. Daher sind wir auf der Suche nach den neuen Aspekten für die nächsten Jahre. Die Medienfassade in der Zeilgalerie ist bei uns durchaus auch umstritten. Wir installieren etwas, was wir ästhetisch gut und zeitgemäß finden. Die Begründbarkeit der Interaktionsformen oder der Sensorik, die uns vor ein paar Jahren noch leichter gefallen wäre, zu fragen, was kann die Fassade denn, was macht die denn für einen Sinn, ist heute durchaus schwieriger. Von daher wollen wir diese Medienfassade auch gar nicht interaktiv verknüpfen mit der Umgebung, weil es aus unserer Sicht eigentlich nicht mehr zeitgemäß ist. Diese Medienfassade soll für uns eigentlich nur eine urbane Lebendigkeit ausdrücken und widerspiegeln, die an solchen urbanen Zentren gegeben ist, etwas artifizielles, etwas künstliches, was man z.B. auch aus NY Times Square oder Tokyo kennt. Diese Urbane Lebendigkeit, die natürlich in Reklame und Lichtspielen sich wiederfindet, die Glamour ausstrahlt und mich neugierig macht und zeigt, dass hier etwas los ist, ist eigentlich der Hintergrund unserer Bespielung hier. Wir programmieren einen Verlauf über den Tag und die Woche, der die Lebendigkeit der Stadt widerspiegelt und verstärkt. #00:10:58.3#

Also praktisch eine Reflexion und Interpretation von Dingen, die in der Stadt passieren? #00:11:02.8#

Genau. Am Montag wird die Fassade ruhiger sein – am Wochenende wird sie lebendiger. Sie spiegelt einfach das wieder, was man traditionell mit Lichtfassaden verbindet. Wir vermeiden Reklame/Werbung im direkten Sinn, das wäre in FF/M auch gar nicht erlaubt. Für uns hat es keinen Sinn, einen großen Screen zu machen, auf dem ein Film läuft. Der Reiz eines Times Square oder Piccadilly Circus liegt ja in der Vielfalt. Im Prinzip sind das ja auch Lichtspiele aus Werbung, die im einzelnen ja niemanden ernsthaft interessiert. Ob da Toyota oder Coca-Cola steht, ist nicht das Faszinierende, sondern die Menge an Licht und Zeichen und nicht die einzelne Werbebotschaft. Ein einzelner Screen mit Werbebotschaften wäre als solitäre Lösung völlig banal gewesen. Deshalb lösen wir das auf und installieren viele kleine Lichtquellen, die im Prinzip diese Lebendigkeit in der Programmierung als Gesamtwirkung suggerieren. #00:12:27.4#

Es gibt ja ein aktuelles Projekt von Realities United in Singapur, "Architectural Advertising Amplifier" wo ja auch ein Werbescreen in eine Medienfassade integriert werden musste und als Grundlage dient. Sie haben aus der Not eine Tugend gemacht. Aber Werbung ist da der treibende Faktor. #00:13:07.1#

Klar. Solche Projekte kosten Geld und jeder Betreiber fragt sich natürlich, wie er damit Geld verdienen kann an solchen prominenten Plätzen. Sobald ich Bilder generieren kann, kann ich Werbung einbinden und Geld verdienen. Das unterbindet die Stadt FF/M aber letztenendes. Gott sei Dank. #00:13:38.1#

Ist das dann eine Art Kunst am Bau Projekt? #00:13:47.0#

Genau. "Kunst" natürlich in Anführungszeichen, aber es geht in diese Richtung. Wir wurden auch tatsächlich schon angefragt, inwiefern wir mit den wenigen Pixeln auch noch Logos zeigen können. Diese Tendenzen fahren also tatsächlich schon jetzt an. Was wir eben vorschlagen, ist eine Nutzung zu bestimmten aktuellen Ereignissen Stichwort WM, Public Viewings ect. Wir haben schon Versuche unternommen in diese Richtung, die eine abstrakte Interpretation solcher Ereignisse miteinbezogen. So könnte man auch über das Jahr hinweg andere Lichtstimmungen schaffen, die sich jahreszeitabhängig verändern. #00:15:12.1#

Du meinstest vorher, euch ist wichtig, wie ein Raum wirkt auf den Betrachter/Benutzer. Was erwartet ihr von Passanten als Reaktion auf eure Bespielung/Fassade, etwa bei einer solchen Interpretation eines Fussballspiels? #00:15:56.0#

Ich habe bei FF/M immer das Gefühl, dass dieses Urbane, was FF/M alleine durch die Hochhäuser ausstrahlt und was von vielen geschätzt wird, dass dieses Gefühl von "Big City" durch so eine Medienfassade sehr positiv kommuniziert wird und entsprechend aufgenommen wird. Internationalität und großstädtisches Flair kommt dadurch sicherlich verstärkt rüber. Ich denke wir werden die Fassade so programmieren, dass sie sehr ästhetisch wirkt und dass die Menschen sich diese Dinge auch für eine Weile ansehen. Was sie selber davon erwarten – ich weiss es nicht. Da es ja eine dauerhafte Installation ist, keine temporäre, wird man sehen, ob und wann die Leute durch eine solche Bespielung auch gelangweilt sind. Man wird sehen. Es ist ja auch immer das Problem, ob der Betreiber nach einer gewissen Zeit die Bespielung aus Kostengründen abschaltet. Das ist ja der ersten Medienfassade dort auch ähnlich ergangen. Die wurde ja relativ schnell abgeschaltet. Wir haben zumindest von Seiten der Programmierung extrem viel Varianz möglich gemacht und geplant – hier ist ja immer das Geheimnis, dass man nicht von vorne herein sein ganzes Pulver verschießt und auch viele eher ruhige Zustände gestaltet. Sonst kann sich sowas natürlich schnell ausreizen. In Frankfurt haben wir auch nicht so viel Touristen wie auf dem Times Square etwa, für die solche Bespielungen ja immer erstmal neu wären. Hier ist die Situation sicherlich eine völlig andere. #00:18:02.7#

Seht ihr euch in dem Zusammenhang als Kurator des Projekts, der definiert, was über die Zeit auf dieser Fassade gezeigt wird? #00:18:18.6#

Das ist das alte Problem bei solchen Anlagen, da man nie weiss, wie sich das Projekt entwickelt. Ein Betreiber erwartet natürlich, dass man ein Werkzeug bereitstellt, über das das Management über die Zeit Dinge selbst über die Jahre verändern kann. Wir verursachen natürlich auch Kosten, die irgendwann eingespart werden, ist ja klar. Das Problem hatten wir öfter, z.B. auch im Cocoon Club. Dort hatten wir ja auch eine Medieninstallation, die vom entsprechenden Room-Jockey verändert, erweitert, verbessert werden sollte und konnte. Es liegt natürlich dann immer in den Händen und am Geschmack der Person, die am Knopf ist. Wir hatten Situationen, wo eben auch Logos über die Membranwand geschoben werden. Das passiert eben, wenn die Veranstaltung entsprechend von Firma XY gesponsert wurde. Da können wir uns als Gestalter nicht verwehren. Wir haben dort jetzt wie auch in der Zeilgalerie über die VVVV Software und generative Systeme die Möglichkeit, nicht vorgefertigte Filmsequenzen rendern zu müssen, sondern in Echtzeit über Parameterveränderungen Variationen von Bespielungen zu erlauben. Das gewährleistet, dass man das System laufen lassen kann, ohne dass eingegriffen

werden muss. Saisonal bzw. zu bestimmten Terminen kann dann eine Sonder-Programmierung eingespielt werden, aber das System läuft sonst unabhängig. Wie lange das dann tatsächlich trägt, wird sich aber weisen. Man wird dann auch sehen am realen Beispiel, wie schnell sich die Varianz dann auch erschöpft. #00:21:58.0#

Seht ihr euch selbst als diejenigen, die an dieser Stelle auch gerne mehr Verantwortung tragen würden und das Projekt weiter begleiten? #00:22:23.0#

Würden wir natürlich gerne. Es ist uns schon wichtig, dass unsere Projekte auch nach 3 Jahren noch gut wirken. Das würden wir schon gerne verfolgen. Aber in den meisten Fällen ist das nicht realistisch. #00:22:24.6#

Ein paar Eckdaten zum Projekt. Wer ist euer Auftraggeber im Projekt? #00:22:43.5#

Auftraggeber ist eine Immobilienentwicklungsgesellschaft IFM, die in Frankfurt im Bereich Büroimmobilien aktiv sind. Ein sehr solider Immobilienentwickler. Bei diesem Projekt kommt für den Auftraggeber zusätzlich hinzu, dass das Gebäude viel Beachtung finden wird und auch im Wettbewerb mit den umgebenden Gebäuden bestehen muss. Da sind natürlich viele Maßnahmen gefragt, die auch Aufmerksamkeit generieren. #00:24:57.2#

Wurde 3deluxe direkt angefragt oder war es ein Vergabeverfahren? #00:24:43.7#

Ich denke sie haben schon gewußt, dass sie für ein solches Projekt eine andere Art von Architektur benötigen. Sie hatten dann direkt bei uns angefragt und haben gemerkt, sie sind hier richtig. Allerdings hat sich im Laufe der Zeit auch herausgestellt, dass sie speziell im Innenbereich an manchen Stellen im Zweifelsfall eher zurückhaltender sind. #00:25:50.3#

Wer sind die Stakeholder, Interessensvertreter in Entscheidungsprozessen? #00:26:03.6#

Bei der IFM, einer kleinen AG, gibt es einen Vorstandsvorsitzenden, der letztendlich auch entscheidet. #00:26:18.1#

Wie integriert ihr die Parteien in den Entwicklungsprozess? #00:26:31.9#

Wir haben wöchentliche Jour-Fixes/Meetings. In heissen Phasen auch erweitert zu 2-3 Meetings pro Woche für Ausführungsplanung und technische Dinge. Der Kontakt ist gerade in der jetzigen Phase sehr eng. #00:26:54.3#

Ist der Kontakt eher eine Art Schulterblick, oder wollen die Auftraggeber stark in den Entwurf einbezogen werden, gerade im Bezug auf Aussenwirkung. #00:27:15.5#

Wir präsentieren generell einen Vorschlag und finden heraus, ob es ihnen gefällt oder nicht. Das hat bisher gut geklappt, wir sind da auf einer ähnlichen Wellenlänge. Die Entwurfsphase ist jetzt vorbei. Nun beginnt eher die typische Phase der Kostenreduzierungen und Budgetverhandlungen, wo entschieden wird, wo Elemente zurückgestellt oder komplett weggelassen werden. Letztendlich geht es hier eben auch um Rendite innerhalb des Gesamtprojekts. Bei anderen Projekten, etwa Leonardo, einer eher überschaubaren Firma, wo wir mit einem visionären Eigentümer sprechen, der das Gebäude auch selbst nutzt, steht natürlich das Projekt selbst im Vordergrund. #00:29:53.3#

Bei der Zeilgalerie steht aber schon auch die Bespielung der Fassade als Kommunikationselement im Vordergrund, das Aufmerksamkeit generiert? #00:29:37.8#

Auf jeden Fall. Die Zeilgalerie hat ja das Problem, dass die Mieterstruktur mittlerweile sehr speziell ist. Sehr jugendlich, sehr underground-orientiert, Piercing-Studios etc... Aber in einer solch prominenten Lage müssten natürlich große Marken als Mieter gewonnen werden. Unser Design/Visualisierungen/Kommunikationsformen helfen an dieser Stelle schon, um das Gebäude entsprechend neu ins Licht zu rücken. #00:31:30.7#

Kann man das Verhältnis des Budgets für die Fassade zum Gesamtprojekt steuern. #00:31:53.9#

Gesamtbudget ca 50 Mio. Fassade und Innenarchitektur ca 8 Mio. #00:32:02.6#

Konkret zu eurem Designprozess. Wie ist ein Projektteam wie z.B. bei diesem Projekt aufgestellt? Sind das v.a. Architekten. Habt ihr Leute von der Grafik mit dabei. Sitzt Meso noch mit im Boot? #00:32:17.0#

Das ist relativ verzahnt. Am Anfang ist der Anteil der Gestalter relativ größer. Aber es ist immer mindestens ein Architekt dabei, damit die Gestaltung nicht Dinge plant, die in der Umsetzung nicht funktionieren. Mittlerweile überprüft die Gestaltung manche Dinge noch, aber die Architekten haben das Projekt nun komplett bei sich. Das verschiebt sich im Projektverlauf. Aber wir wollen diese strikte Trennung von unserer Philosophie her natürlich vermeiden. So beeinflussen bei uns die Architekten auch gestalterisch viel, und ebenso im weiteren Verlauf, wenn in der Ausführungsplanung Dinge verändert werden müssen, wird auch der Austausch mit den Gestaltern wieder gepflegt. Wir versuchen, hier schon die Verzahnung aufrecht zu erhalten. Wir sind zwar ein interdisziplinäres Büro, aber natürlich macht nicht jeder alles bei uns. Das ist klar. #00:33:32.8#

Wie groß ist so ein Team bei euch? #00:33:40.8#

Man kann sagen, wenn man mal von dieser Aussenfassade ausgeht, sitzt zunächst mal ein Designer dran, der die Fassade erstmal sehr grafisch versucht zu lösen. Die Fassade ist ja zunächst auch ein Layer, kein Volumen. Ein Innenarchitekt, der bei uns sehr grafisch arbeitet, ging hier über Illustrator den Grundentwurf an. Dann geht das in die 3D-Gestaltung. Hier nutzen wir CAD-Software im Architekturbereich und in der Darstellung Softimage und Maya. Der Grundentwurf geht dann zunächst in die 3D Visualisierung, wo dann ein Ping-Pong Prozess zwischen dem Designer und dem 3D Gestalter startet, um hier die Designlösung zu überarbeiten. Nach und nach kommen dann 1-2 Gestalter hinzu, um Teilbereiche zu übernehmen. So kommt dann nach und nach eine End-Fassung zustande, die als 3d Modell in das CAD Programm übertragen wird, und ab da planen die Architekten. Das Problem ist aber, dass meist die Gestaltung bis zum Schluss nicht abgeschlossen ist. Auch wenn die Architekten schon in der Planung arbeiten, wird trotzdem noch im 3D Modell gearbeitet. Da haben wir nach wie vor fast unlösbare Probleme im Workflow, weil wir nach wie vor in zu vielen unterschiedlichen Softwares arbeiten

müssen. Oft existieren dann 2 manchmal auch 3 verschiedene 3D Modelle, die nicht jeden Tag upgedatet werden können. So können manchmal auch Missverständnisse entstehen und zu Tage treten, die natürlich auch gravierende Auswirkungen haben können. Das Problem ist bisher noch nicht gelöst. #00:36:01.7#

Wann kommen Personen/Experten in den Prozess, die euch im Bereich generative Systeme oder Lichtplanung/LED beraten und unterstützen? #00:36:24.8#

Wir hatten früher jemanden direkt vor Ort sitzen, der VVVV programmierte, um nicht immer direkt zu Meso gehen zu müssen und Dinge direkt bei uns zu lösen, vor allem, wenn man noch im kreativen Prozess steckt. Wir arbeiten mittlerweile mit Softimage, um VVVV-ähnliche Visualisierungen zu erarbeiten und denken so ersteinmal sehr viel vor, um das auch an den Kunden zu kommunizieren, damit er versteht, was man vorhat. Das ist meist ein kurzer 60s-Film, der die Bandreiten durchspielt, die wir uns an Visualisierungen und Funktionalitäten vorstellen. Nach diesen Vorgaben erarbeitet dann MESO die VVVV Programmierung. MESO arbeitet ja selber sehr designorientiert und kreativ, so ergeben sich meistens dann nochmals zusätzliche Bilder. Meso ist ja kein klassischer Dienstleister, sondern auch selbst sehr stark im Design, das ergibt oft nochmal eine zusätzliche Bereicherung #00:37:48.2#

Euer Austauschmedium ist dann also ein Film, der eure Vision darstellt und vorstellt. #00:37:55.4#

Genau. #00:37:58.2#

Arbeitet ihr auch mit Grasshopper? Ein Plug-In für Rhino, das auch ähnlich wie VVVV eine grafische Programmierumgebung bietet? #00:38:07.8#

Nein, mit Rhino arbeiten wir gar nicht. #00:38:27.0#

Wenn ihr eure Vision für eure Visualisierungen auslotet und definiert, hört man schon heraus, dass das ganze designgetrieben ist, weniger technikgetrieben. Es geht in jedem Fall darum, dass die Visualisierung ansprechend aussieht und neue Erfahrungen bietet. Seht ihr euch andere Dinge und Projekte in diesem Bereich bisher entstanden sind. Oder ist das ohnehin gegeben, da man sich ständig informiert. #00:39:05.2#

Also, naja. Wir fahren jetzt z.B. nicht auf die Ars Electronica, was wir eigentlich machen müssten. Natürlich bekommt man über das Netz sehr viel mit von den Dingen, die im Moment los sind. Wir versuchen seit Jahren, das etwas einzuschränken, weil wir denken, man wird nicht wirklich inspiriert, sondern macht unterbewusst sehr viel nach, was man gesehen hat, und man ist streng genommen von der Vielfalt an guten Projekten und Leuten, die in diesem Bereich weltweit unterwegs sind, auch schnell desillusioniert. Und das ist nicht gut für unsere Leute, haben wir gemerkt. Wir haben in der Vergangenheit schon öfter diskutiert, ob wir die Zeitschriften und Medien, die wir in diesem Bereich abonniert haben, einfach nicht mehr ansehen sollten. Wirkliche Inspiration kommt streng genommen aus ganz anderen Feldern. In der Vergangenheit haben wir uns sehr viel mit wissenschaftlichen Themen auseinandergesetzt, Bionics etc, die mit Design eher wenig zu tun hatten. Das war sehr inspirierend. Daher denke ich, sich zu sehr an Dingen zu orientieren, was machen andere im Moment, ist eigentlich nicht fruchtbar. Eher das Gegenteil ist der Fall, und man argumentiert nur: "Das gab es schon, das gab es auch schon...". Es macht ja oft nichts, wenn es Dinge schon gab, wenn die Begründung stimmt. Das ist ja wichtig. #00:40:45.4#

Andersherum gedacht: Gab es bei diesem Projekt mit der Fassade Einschränkungen und Auflagen der Stadt, wo gesagt wurde, so etwas kann auf keinen Fall integriert werden? #00:41:20.0#

Die Fassade ist im Bauantrag eigentlich nur durchgegangen, weil es an dieser Stelle bereits schon eine solche interaktive Fassade gab. Sonst wäre das vermutlich gar nicht genehmigt worden. In vollem Umfang haben die Ämter das meiner Meinung auch noch nicht voll umrissen, was die Fassade am Ende können wird, weil ein Bauantrag das auch nicht so genau beschreiben muss. Den Film haben wir an dieser Stelle auch gar nicht gezeigt. Mal sehen, was da noch passiert. Die Stadt ist da eigentlich eher restriktiv und skeptisch, was solche Projekte angeht. #00:41:57.0#

Ein Punkt auf meiner Frageliste, den du vorhin schon angesprochen hast, sind die Tools, die ihr im Entwicklungsprozess anwendet, und wie ihr an Schnittstellen arbeitet, z.B. mit Hilfe des angesprochenen Visualisierungsfilms. Nutzt ihr im Zusammenhang mit Designexploration bestimmte Tools, die ihr typischerweise verwendet? Das kann Software sein, aber auch bestimmte Vorgehensweisen, dass z.B. das Team rotiert? #00:42:50.4#

Wir haben das Gefühl, dass die meisten Projekte dann gut werden, wenn sie verschiedene Leute in der Hand hatten, die auch unterschiedlich arbeiten. Bei diesem Projekt, obwohl es für unsere Verhältnisse in der Formsprache eher simpler erscheint, sitzt eben zum Ächtst jemand dran, der eher wie ein Grafiker arbeitet, dann ein 3D Mann, dann am Ende jemand, der als Designer über Photoshop nochmals verschiedene Elemente und Ecken überarbeitet und Möglichkeiten zur Erweiterung einbringt. Wir haben gemerkt, auch wenn du mal hinter dich schaust, dass Handskizzen und Bleistiftskizzen bei uns immer noch ein ganz wichtiges Element in der Formfindung darstellen. Nur zu sagen, der Computer findet die beste Form, ist, eigentlich nicht so sehr unser Weg, obwohl wir oft so wahrgenommen werden. In der Regel sehen solche rein computergenerierten Formen auch sehr wenig durchgearbeitet aus. Meist sieht man das solchen Entwürfen auch an. Man merkt, wenn Entwürfe durch verschiedene Hände gehen und so auch reifen können. Bei vielen Entwürfen weltweit merkt man auch schnell, mit welcher Software gearbeitet wurde und warum die Dinge oft auch so aussehen wie sie aussehen. Deswegen werden die Entwürfe oft auch immer ähnlicher. Ich glaube, dass das Thema Individualisierung in der nächsten Zeit immer wichtiger für Gestalter wird, um sich auch zu befreien von der Optik bestimmter Programme. #00:44:28.5#

In solchen Fällen gibt eben das Tool viel vor.... #00:44:41.7#

Es gibt natürlich tolle Möglichkeiten, die man auch zeigen und ausprobieren will. Man merkt auf einmal, dass weltweit alle an einem ähnlichen Punkt sind, und oft ist nicht mehr zu sehen, ob die einzelnen Gestalter noch ihre eigene Handschrift haben. Das wird meiner Meinung nach immer problematischer. #00:45:03.4# Man merkt das auch im Grafischen oder interaktiven Bereich auch. Wenn es nur drum geht, zu skizzieren, wie ein Storyboard oder eine bestimmte Interaktion ablaufen sollte. Wer zeichnen kann und Dinge schnell erfassen und visualisieren kann, ist klar im Vorteil. Skizzen helfen dabei eben bei der Ideenfindung. #00:45:45.0# Man kommt eben auf Formen/Linien, die eben über eine reine 3D Visualisierung und Formgenerierung nicht unbedingt erreicht werden, weil die Software andere Wege und Regeln befolgt. Jemand, der mit der Hand zeichnet, macht eben auch schnell andere Dinge. Diese Überlagerung dieser verschiedenen Disziplinen verhindert auch eine Oberflächlichkeit, die viele Architektorentwürfe heute haben, die nur in 3D entstanden

sind. Z.B. dieses Gebäude hier ist auch nur in 3D entstanden und man sieht es ihm an. Das gefällt uns nicht wirklich. Es gibt zwar schöne Strukturen, man kann es schnell zusammenbauen, aber man merkt, es hat keine Geschichte, es ist zu schnell entstanden. Es gibt eben Dinge, die im Detail auch länger brauchen, um eine gewisse Tiefe und Bedeutung zu erreichen. Das ist eben auch die Gefahr. Wir bekommen sehr viele Bewerbungen von Studenten, und seit ca 2-3 Jahren sieht alles extrem ähnlich aus. #00:47:10.5#

Arbeitet ihr auch mit 3dimensionalen Modellen, abgesehen von den Visualisierungen. #00:47:14.4#

Eigentlich meist nur für den Kunden, weil die es immer noch gern haben, ein Model zu sehen. Für uns gibt es höchstens kleine Arbeitsmodelle, um zu überprüfen, ob die Form stimmt. Es ist schon richtig, dass in der 3D Visualisierung z.B. durch die Kameraperspektive der Eindruck oft extrem täuscht, gerade von außen. #00:47:38.9#

Der Zaha Hadid Effekt – immer schön verzerrten, sieht immer gut aus. #00:47:42.6#

Ja klar, im Weitwinkel sieht jedes Gebäude sehr schnell und dynamisch aus. Ein Modell kann da schon eher ernüchtern. Aber das ist ja auch ganz gut, um zu wissen, wie es wirklich aussehen wird. #00:47:59.9#

Wenn man jetzt von interaktiven Installationen ausgeht: Arbeitet ihr hier mit Modellen, Mock-Ups, die die interaktive Szenerie suggerieren oder erfahrbar machen? #00:48:19.4#

Ja. Das muss man eigentlich auch, wenn es um interaktive Installationen geht. Das geschieht bei uns oft bei MESO, wenn es an die Umsetzung geht. Mit interaktiven Bildschirmen oder Interfaces, die erstmal rudimentär entwickelt werden, wird erst mal überprüft und dem Kunden gezeigt. Weil so etwas natürlich über die reine Visualisierung nicht geleistet werden kann. Da gibt es also schon noch Zwischenstufen. #00:48:59.9#

Du hast es vorher angesprochen: Permanente Installationen haben andere Herausforderungen. Wie geht ihr hier mit Testing-Phasen um? #00:49:20.6#

Es gibt ja immer so einen Bauzeitenplan, in dem diese 1-3 Wochen Tests festgehalten sind, gerade von technischen, interaktiven, medialen Geschichten, die du auch nicht 100% simulieren kannst und vor Ort sehen musst. Da ist es eigentlich bei jedem Projekt so, dass diese Zeit am Ende nicht mehr da ist. Das Projekt ist fertig gebaut, jetzt machen wir 3 Wochen Feintuning, das hat es eigentlich noch nie gegeben. Es läuft eigentlich immer auf den letzten Drücker und parallel zu Resteinbauten. Weil das Testing natürlich die letzte Einheit ist, ist diese immer verbraucht bei einem Projekt, das pünktlich fertig sein muss. Da hatten wir schon die skurrilsten Situationen. Auch im Fussballglobus, der medial sehr aufwändig war. Da wurde innen noch viel gebaut, während in dieser kleinen Kugel alle drin saßen und den Raum versucht haben zu programmieren, und zwischendurch kam der Innenminister oder ehemalige Trainergrößen, die sich die Dinge anblicken. Der blanke Horror eigentlich. Aber das ist eigentlich fast immer so. Am Schluss, wenn es um die Feinheiten geht, arbeitet man unter widrigsten Bedingungen. #00:51:13.4#

D.h. es ist bei euch eigentlich kein Unterschied, ob temporär oder permanente Installation? #00:51:21.1#

Meistens ist eben am Ende das Zeitfenster aufgebraucht. #00:51:36.0#

Wenn wir von Testing sprechen, gibt es eine Planung, wie Feedback eingeholt wird von der Öffentlichkeit, gerade bei einem Öffentlichkeitswirksamen Projekt? Oder kommt das automatisch, über Leserbriefe... #00:51:57.0#

Es kursieren natürlich schon einige Bilder im Netz, und es gibt natürlich auch Blogs, wo sich viele Leute darüber auslassen. Aber man weiss natürlich nicht, was man darauf geben soll, weil das ja auch ganz spezielle Leute sind, die sich dort äußern. Es ist schwer zu sagen, was der Mann von der Straße, der sich nie an so einem Blog beteiligen würde, wirklich davon halten würde. Das ist ja eine ganz bestimmte Gruppe, die Kommentare abgibt. #00:52:26.7#

Oder überhaupt schon weiss, was an dieser Stelle geplant ist. #00:52:39.9#

Genau. #00:52:42.4#

Ich habe noch ein paar abstraktere Fragen, die eher indirekt mit dem Projekt zu tun haben. Wie würdest du z.B. den Begriff "medialisierende Architektur" beschreiben. Was bedeutet der Begriff für dich? #00:52:55.0#

Schwierige Frage. Wir suchen ja wie gesagt noch nach dem Sinn, warum man Architektur überhaupt medialisieren sollte. Man kann sagen, es ist nun mal heute so, daher wird es auch eingesetzt, weil es einfach zum Leben gehört. Weil es natürlich auf architektonischem Level immer ordentlich Geld kostet, muss man sich natürlich trotzdem die Sinnfrage stellen. Zu sagen, das Gebäude fällt auf, ist bei einem solchen Gebäude sicherlich richtig, weil das Gebäude mit den Nachbarn konkurrieren muss, man will, dass das Gebäude Tagesgespräch wird, das ist sicherlich wichtig. Aber wo ist der tiefere Sinn der Medialisierung eigentlich bei Gebäuden? Dann gibt es natürlich das Thema Funktion. Intelligente Gebäude und Fassaden, die automatisch auf Wetter, Licht, Sonneneinstrahlung reagieren, das ist ja auch eine Art der Medialisierung. Was uns aber eigentlich viel mehr interessiert, weil wir uns ja nicht als die klassischen Architekten sehen, die einfach grundsätzliche Häuser mit den entsprechenden Features bauen, die ein Gebäude heute haben muss, sondern wir versuchen ja eher eine Nische zu besetzen, Gebäude zu machen, die etwas Besonderes haben. Das können wir natürlich in Innenräumen eher machen, weil die oft Themen haben, ob Ausstellungen oder ein Club, das heisst Räume mit Inhalten zu belegen. Wir sagen eben, die wenigen Gebäude, die wir wahrscheinlich in unserem Leben bauen dürfen, denen wollen wir mehr geben. Unser Anspruch ist schon, als Gestalter die Welt zu gestalten, und wir haben das Gefühl bei Architektur, dass gerade in Mitteleuropa auch viel hässliches oder nüchternes oder Dinge entstehen, wo man merkt, da ging es nur ums Geld, und nicht um Schönheit oder Ästhetik. Wir versuchen hier schon ein Gegengewicht zu setzen. Wir sagen nicht, alle Gebäude müssen so sein. Da wir nie alle bauen werden, ist das für uns auch nicht die Frage. Von daher, Gebäude mit Inhalten und Botschaften und Atmosphären zu belegen, die die Welt in irgendeiner Form positiv bereichern, darin sehen wir unsere Aufgabe. Wenn wir das über den Einsatz von Medien hinkriegen, wäre das für uns eine Begründung, mediale Fassaden zu machen. Wenn wir eine Bereicherung hinbekommen im Sinne von: Die Welt wird schöner und nicht nüchterner. #00:55:50.5#

Also eigentlich eine Art Nachfolge von Venturi und Scott Browns Idee (Learning from Las Vegas), also der Idee, dass Architektur immer schon Ikonizität mit sich gebracht hat... #00:56:10.7#

...ja, und letztlich eigentlich immer letztendlich auch Gefühle vermittelt hat. Es gab Phasen, die das extrem und weniger extrem verfolgt haben. Aber wir vermissen generell im Städtebau den Mut zu irrationalen Dingen. Die Architektenwelt ist eben sehr rational. Viele sind ja mehr Ingenieure als Gestalter. Wir wollen das Gegengewicht setzen, indem wir glauben, dass auch der öffentliche Raum durchaus mehr irrationale/emotionale Aspekte haben darf. Wie auch immer das stilistisch aussieht. In dem Moment, wo uns neue Medien helfen, dem Gebäude mehr Tiefe zu geben, werden wir diese auch immer wieder einsetzen. Allerdings nur um zu sagen, das Gebäude reagiert auf seine Umwelt, und wir können anzeigen, wenn 1000 Menschen drin sind, blinkt es mehr... das ist für uns eigentlich vorbei und macht keinen Sinn für uns. Das war im Jahr 2000 ein Thema, aber heute finden wir nicht mehr. Das hat sich erschöpft.

#00:57:24.7#

3deluxe – Transdisciplinary Design. Es gibt multidisziplinär, multiprofessionell, interdisziplinär, transdisziplinär. Was ist jetzt anders? #00:57:29.8#

Ich weiss es nicht. Wahrscheinlich weil das interdisziplinäre so viel gesagt wurde und normal klingt, dass wir gedacht haben, transdisziplinär klingt für uns eigenständiger und neuer. Das ist eigentlich der einzige Grund für den Untertitel. Der Hintergrund ist natürlich trotzdem der, dass wir versuche, übergreifend zu arbeiten, was nicht immer so funktioniert, wie das nach aussen dargestellt wird, weil der Alltag eben auch anders ist, platt gesagt. Aber wir haben auch das Gefühl, auch wenn wir gar nicht so sehr viel mit der Grafik zusammenarbeiten, dass die Interdisziplinarität in der Arbeitsweise innerhalb unserer Architekten"zelle" schon vorhanden ist, und viele einfach auch sehr grafisch denken. Die Offenheit ist doch sehr viel größer, automatisch, oder vielleicht auch durch die Auswahl der Leute schon. Dieses eingeeengte Denken ist bei uns einfach nicht so vorhanden. Das heisst nicht, dass man immer zwei Leute aus verschiedenen Disziplinen zusammenstecken muss, um interdisziplinär zu arbeiten. Es geht für mich eher um die allgemeine Offenheit. #00:59:04.0#

Gibt es andere Mittel, die ihr einsetzt, um so eine Kultur zu fördern. Teamzusammenstellungen können ein Mittel sein, aber auch interne Vorträge... #00:59:23.2#

Das ist auch so ein typisches Thema. Das nehmen wir uns immer vor. Aber es kommt dann realistisch ein- zweimal im Jahr vor. Wenn du so im Alltag steckst, ist einfach zu wenig Zeit, so etwas kontinuierlich durchzuziehen. Obwohl wir uns als transdisziplinäres Büro verstehen #01:00:26.0#

Ihr versteht euch als Designbüro im erweiterten Sinn, sowohl in der dreidimensionalen als auch grafischen und interaktiven Richtung. Es gibt ja Tendenzen aus dem Produkt- und Interactiondesign, möglichst früh die Nutzer eines Produktes oder interaktiven Dienstes schon früh in den Gestaltungsprozess zu integrieren. Ist das ein Ansatz, der für euch interessant ist oder überhaupt richtig erscheint? Also konkret Co-Creation als Designansatz? #01:00:35.2#

Ich nehme an, dass solche Ansätze für Produktdesign z.B. sehr wichtig sind. Für das, was wir machen... wir müssen unsere Projekte ja nicht an jeden verkaufen. Es geht bei uns oft nicht darum, dass möglichst viele Leute das nutzen können. Wir machen ja auch keine Werbe- oder Kinoproduktionen. Das ist bei uns nicht der Anspruch. Wir machen ein oft ein "Solitär" zwischen Tausend anderen, und wenn der nicht allen gefällt, ist das eigentlich kein Problem. Es sind ja oft auch normale Erfahrungswerte. Das wird ja natürlich auch so fort über den Kunden sofort korrigiert. Also wenn etwas völlig daneben aussieht, das bekommt man direkt mit. Dann wissen wir, irgend was stimmt anscheinend nicht. Daher gibt es schon diese korrektiven Instrumente. Aber was du jetzt meinst, also die offensivere Einbeziehung der späteren Nutzer, spielt bei unseren Projekten eigentlich eine nicht so große Rolle. #01:01:45.4#

Es kann ja auch sein, dass die gegenüberliegende Seite/der Kunde das gar nicht möchte, und sich deshalb bewußt an Profis wie 3deluxe wendet, um Experten/Sonderlösungen zu bekommen. #01:01:56.5#

Klar. Es ist ja oft so: Wenn es allen recht gemacht wird, ist es meistens auch langweilig... #01:02:09.0#

Das heisst, dieses direkte Feedback von Aussenstehenden ist bei euch für den Gestaltungsprozess nicht wirklich relevant. Ist das vielleicht später interessant, wenn es darum geht, die Beispielung zu einem späteren Zeitpunkt zu adaptieren bzw. zu ändern? #01:02:51.9#

Da verlassen wir uns immer auf unser Gefühl, auch auf Meinungen aus dem direkten Umfeld. Und wenn meine Frau sich z.B. Dinge ansieht und die für dämlich hält, ist da für mich auch schon mal ein Zeichen. Da muss ich nicht 10 weitere Personen fragen. Oft reichen ein zwei Meinungen, um zu merken, man liegt hier nicht ganz richtig...Das passiert auch intern bei uns, wenn Personen z.B. aus dem Projektmanagement oder der Büroverwaltung/Buchhaltung begeistert sind, wissen wir schon, dass wir nicht ganz falsch liegen.

#01:03:41.1#

Das Thema Energieverbrauch/Sustainability bei medialen Fassaden - ist das ein Thema, das für euch bei der Gestaltung auch wichtig ist? #01:03:53.2#

Es sollte wichtig sein. Unser Problem ist, dass das hauseigene KnowHow dafür noch fehlt. Wir sind da schon seit einer Weile dran, aber wir müssen uns hier momentan externer Quellen bedienen. Wenn man konsequent ist, sollte man auch viele Dinge gar nicht erst machen. Bei der Medienfassade gab es den Vorschlag, dass wir auf dem Dach Photovoltaikanlagen installieren, um den Verbrauch auszugleichen. Der Fachingenieur, der das Gebäude rechnet, sagte, das lohnt sich nicht. Vielleicht in 20 Jahren. Bis dahin wäre es reines Alibi. Daher haben wir gesagt, dann machen wir das auch nicht. Wir haben natürlich rechnen lassen, was die LED Fassade kostet und verbraucht. LED ist erstaunlich effizient und die LEDs sind eigentlich nie alle an, sondern nur punktuell leuchtend. Daher ist der Verbrauch erstaunlich gering. Aber es ist streng genommen natürlich ein Verbrauch, der nicht sein müsste. Das ist klar. Ein anderer Punkt ist: da die ganze Elektrik neu gemacht wird, wird der Verbrauch des Gebäudes generell auf ein Drittel des Verbrauchs vor 20 Jahren gesenkt. Daher kommt das Gebäude auf einen neuen Stand und verbraucht deutlich weniger als zuvor. Was die Medienfassade angeht: sie wirkt sehr groß, aber durch die eingesetzten LEDs, das ist wirklich fantastisch, verbraucht sie wirklich sehr wenig.

#01:05:36.9#

Arbeitet ihr dort über indirektes Licht, so dass die LED nochmals von einer Fläche reflektiert wird und dadurch heller/Flächiger wirkt. Oder werden die Punkte als Punkte inszeniert? #01:05:46.0#

Genau. Einzelne Punkte, die in einer Grafik gesetzt sind. Die Grafik selbst wird kaum zu sehen sein durch die grobe Rasterung. Ich kanns dir mal zeigen, wenn du möchtest... #01:06:21.0#

Du hattest ja auch bei der SEF angesprochen, dass es für euch eigentlich interessanter ist, mit Fassaden zu arbeiten, die nicht unbedingt lichtemittierend sind, sondern die eher im umgekehrten Sinn das äussere Licht reflektieren. #01:07:19.7#

Ja, bei Leonardo wäre eine technische Fassade mit LED Licht lächerlich gewesen. Das Gebäude steht auf dem Land, dadurch hätte das wirklich komisch gewirkt. Für uns war das dann auch ein interessanter neuer Weg, wir sind primär ja keine Technik-Freaks. Uns geht es ja darum, Gebäude mit Inhalten zu belegen... Irgendwann ist das vielleicht auch die modernere Herangehensweise, eben nicht so technisch aufwändig zu arbeiten. #01:08:56.2# Das Grundraster ist so aufgebaut, dass wir ein inneres und ein äusseres Feld haben. Das innere ist eben zusätzlich mit einer Grafik überlagert. Dadurch, dass wir nur bestimmte Bereiche ansteuern, können wir die Grafik komplett auflösen, aber sie kann natürlich aufkreuzen. Das können auch ganz andere Dinge sein, wo du nur Strukturen siehst. Das interessante ist eigentlich der Aufbau: also Glas, integriert eine Folie im Glas, die bedruckt ist mit einem karierten Muster, und dann gibt es Aussparungen, wo die LED Stripes drin liegen. Dadurch hat das eine gewisse Komplexität, von der wir erwarten, dass sich über die Einspielungen, das Licht und die Bedruckungen auch visuelle Vielschichtigkeiten ergeben. In diesem Film haben wir mal die Bandbreite der Möglichkeiten ausprobiert. Wenn alle an sieht, sieht man diese Lichtstruktur. Was können wir überhaupt visuell erreichen, es sind eben nicht wahnsinnig viele Lichtpunkte. Anfangs hatten wir eine Auflösung vorgeschlagen, auf der man auch hätte Filme und Bilder laufen lassen können. Das war dem Kunden zu teuer. Mittlerweile haben wir noch nichtmal ein Viertel der ursprünglichen Menge integriert #01:11:04.4#

Basiert die Konstruktion/Anordnung auf vorgefertigten LED Produkten/Meshes? #01:11:27.2# #01:11:12.9#

Wein. Das ist ein eigens zusammengestelltes Raster aus den LED Stripes. #01:13:07.8# Wir können uns die Visualisierung auch gleich bei Max mal ansehen. Also nur die Visualisierung als Licht auf einer schwarzen Fassade zu zeigen, das finden wir nicht so spannend, das wäre uns zu simpel und direkt. Dadurch, dass wir diesen Grafikblock in der Mitte haben, der hinter Glas ist, also schwarzes Metall, durch das ab und zu Lichtpunkte durchkommen, dadurch wirkt das für uns ok. Lass und kurz mal zu Max rüber gehen... #01:14:13.9#

Ok dann bin ich durch mit meinen Fragen. Vielen Dank für deine Zeit. #01:16:27.4#

7.5 Academic Activities

Peer Review: Publications, Presentations, Workshops

Since October 2008, the researcher had several papers accepted and reviewed for conferences and was able to present them with a focus on particular aspects of my research work. Additionally, stages and tools of the research have been presented in the context of academic lectures (*Mres InfoEnvironments*, *DHBW Media Design Lectures and workshops*) and Conferences (*Media Architecture Biennale workshop*). The related papers and abstracts are attached in the Appendix section at the end of this review. Aspects of the contextual research on design research methodologies have led to extended essays (*FORM magazine*) and a book chapter (*Design der Zukunft*) on issues of participatory, critical and multidisciplinary design as well as the related methods of practice. Participation in subject related workshops included: *Creating Content for Media Architecture* (MESO), *OpenFrameworks Introduction* (OF-Community, London), *VisualisationSensingSimulation – Rhetoric Functions of Public Displays* (MIT SenseableCityLab workshop at Media Architecture Biennale 2010).

Academic Publications, Lectures and Presentations	Type
<p>“Digital Default”: Presentation & Talk Uniplan, Cologne Germany, April 2016</p>	Lecture
<p>“Designing ‘post-digital’ futures”: Open Inspiration Talk Designit, Munich Germany, October 2015</p>	Lecture
<p>“Urban Digital Literacy – Reading and Writing the Digital City” 21st Leipzig Typodays 2015, Leipzig Germany, 8-9 May 2015</p>	Lecture (Paper)
<p>“Beyond the device” <i>form</i>, no. 258, 2015, p. 36</p>	Article
<p>“Collaborative Sketching for Narratives” Part of P3 input on visual story ideation: Department Media Design 13 April 2015, DHBW Ravensburg, Germany</p>	Workshop

<p><i>“Digital Material”</i> – Talk</p> <p>Design der Zukunft – Alles postdigital?</p> <p>TFM Institute, University of Vienna, Austria,</p> <p>22 January 2015</p> <p>Chair: Jana Herwig, University of Vienna</p>	Lecture
<p><i>“Stop Asking – Start Questioning”</i> in</p> <p>Cornelia Lund and Holger Lund (ed.), <i>Design der Zukunft</i> (Ludwigsburg: avedition, 2014).</p>	Book Chapter
<p><i>“Collaborative Visual Thinking”</i></p> <p>P3 student workshop: Department Media Design</p> <p>9 January 2013,</p> <p>DHBW Ravensburg, Germany</p>	Workshop
<p><i>“(Proto-)Type”</i></p> <p>Webfontday 2012 – Munich, Germany,</p> <p>10 November 2012</p> <p>Chaired by: TGM Munich, Boris Kochan</p>	Lecture
<p><i>“Prototyping for Ownership”</i></p> <p>“Paper Session Chair: Lessons for Design”</p> <p>Media Architecture Biennale 2012 – Aarhus, Denmark,</p> <p>15-17 November 2012,</p> <p>Media Architecture Institute and Aarhus University</p>	<p>Workshop</p> <p>Paper Session</p> <p>Chair</p>
<p><i>“Stop Asking – Start Questioning”</i></p> <p>Design der Zukunft – Symposium 2012,</p> <p>2-3 June 2012,</p> <p>Duale Hochschule Baden-Württemberg Ravensburg,</p> <p>Studiengang Mediendesign, Germany</p> <p>Chaired by: Dr. Cornelia Lund (Universität Hamburg/FH Vorarlberg Dornbirn) und Prof. Dr. Holger Lund (DHBW Ravensburg)</p>	<p>Paper</p> <p>Presentation</p>
<p><i>“Designing Dialogue in Media Architecture”</i></p> <p>Fourth International Conference on Design Computing and Cognition DCC10</p> <p>Workshop: Design Communication,</p> <p>10 July 2010, hosted by: University of Stuttgart, Germany and Krasnow Institute at George Mason University, VA.</p> <p>Chaired by: Anja Maier, Technical University of Denmark, DK; Maaik Kleinsmann, Delft University of Technology, NL.</p>	<p>Paper</p> <p>Presentation</p>

<i>“Designing Social Interaction Spaces”</i> (Accepted – not presented) <i>Space: the Real and the Abstract – PhD Student Conference,</i> <i>July 6th 2010, The Centre for Art, Design Research and Experimentation (CADRE),</i> <i>School of Art and Design, University of Wolverhampton, UK.</i>	Paper
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<i>“Spatial experience rather than large screens – designing for mediated architecture”</i>	Paper Presentation
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The Planetary Collegium's Xth International Research Conference:
Experiencing Design – Behaving Media,
19 – 22 November 2009,
hosted by: MHMK University of Applied Sciences Munich, Germany.
